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**Datasheet for the decision  
of 17 April 2012**

**Case Number:** T 0383/11 - 3.5.02

**Application Number:** 97954466.5

**Publication Number:** 0947042

**IPC:** H02J 9/06

**Language of the proceedings:** EN

**Title of invention:**  
Hybrid generator apparatus

**Patentee:**  
Da Ponte, Manuel Dos Santos

**Opponent:**  
Cummins Inc.

**Headword:**  
Hybrid generator apparatus/Da Ponte

**Relevant legal provisions:**  
EPC Art. 56

**Relevant legal provisions (EPC 1973):**

-

**Keyword:**  
"New requests after remittal which reopen examination -  
admissibility - main and first auxiliary requests (no)"  
"Main and first auxiliary requests - disregarded"  
"Second auxiliary request - inventive step (yes)"

**Decisions cited:**  
G 0002/98, T 0796/02

**Catchword:**

When after remittal the proprietor files new requests which require examination to be re-opened on issues that have already been judged upon by the Board of Appeal, without the justification that might be provided, for example, by the proprietor being faced with a new situation, then such requests should be deemed to be inadmissible.

See reasons for the decision, point 1.



Case Number: T 0383/11 - 3.5.02

**D E C I S I O N**  
of the Technical Board of Appeal 3.5.02  
of 17 April 2012

**Appellant:** Da Ponte, Manuel Dos Santos  
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**Decision under appeal:** Decision of the Opposition Division of the  
European Patent Office posted 7 December 2010  
revoking European patent No. 0947042 pursuant  
to Article 101 EPC.

**Composition of the Board:**

**Chairman:** M. Ruggiu  
**Members:** G. Flyng  
P. Mühlens

## Summary of Facts and Submissions

### I. Background of the present appeal

- (a) European patent no. 0 947 042 was granted on the basis of European patent application number 97 954 466.5 to Manuel Dos Santos Da Ponte (the "proprietor").
- (b) An opposition was filed against the grant of the patent by Cummins Inc. (the "opponent").
- (c) The opposition division issued an interlocutory decision ("first decision") that, account being taken of the amendments made by the patent proprietor during the opposition proceedings, the European patent no. 0 947 042 and the invention to which it relates were found to meet the requirements of the EPC. The decision was taken on the basis of an amended set of claims 1 to 12 that was filed during oral proceedings before the opposition division as a first auxiliary request.
- (d) Both the proprietor and the opponent appealed against the opposition division's first decision. During the ensuing appeal (T 0911/06, "first appeal"), in a letter dated 9 October 2009, the proprietor submitted a main request and seven auxiliary requests, the fourth auxiliary request corresponding to the patent as granted and the second auxiliary request corresponding to the patent as maintained by the opposition division.

(e) In its decision on the first appeal, the present Board, in a different composition, held inter alia that:

- the patent as granted (fourth auxiliary request) and the patent as maintained by the opposition division (second auxiliary request) offended Article 83 EPC;
- the main request and the first auxiliary request offended Article 123(2) EPC; and
- the third auxiliary request did not offend Article 123(2) EPC or Article 83 EPC.

Noting that the amendments made according to claim 1 of the third auxiliary request and the attempt to introduce into the proceedings a new document (D8: "Variable speed diesel power generation design issues" by Anthony L. Rogers, UMI Number 9639021, Copyright 1996) had created an entirely new situation that had not been considered in the contested [first] decision, the Board decided to remit the case to the department of first instance for further prosecution (see reasons for the decision, point 12).

(f) After remittal, during the proceedings before the first instance, the proprietor filed a new main request and four auxiliary requests with a letter dated 7 September 2010. Subsequently, in oral proceedings on 7 October 2010, the proprietor withdrew the first and second auxiliary requests and renumbered the third and fourth requests as first and second requests. Claim 1 of the second auxiliary request (after renumbering) corresponded to claim 1 of the third auxiliary request that had

been the subject of the Board's decision on the first appeal.

- (g) With a decision posted 7 December 2010 ("second decision"), the opposition division revoked the patent, finding *inter alia* that:
- the proprietor's main request was admissible;
  - document D8 was made available to the public before the priority date of the patent; and
  - claim 1 of the main request and the first and second auxiliary requests (after renumbering) lacked novelty from document D8.

II. The proprietor appealed against the opposition division's second decision and, with the grounds for appeal, submitted a main request and first and second auxiliary requests, which corresponded to those which were the subject of the opposition division's second decision.

III. The Board summoned the parties to oral proceedings. In an annex to the summons the Board made observations *inter alia* on the admissibility of the main and first auxiliary requests and the date of public availability and the disclosure of document D8.

Both the proprietor and the opponent replied to the summons in letters dated 16 March 2012. The proprietor filed an affidavit by Anthony L. Rogers and a document by Ohio Semitronics, Inc. describing OSI PC 5 series AC watt transducers.

IV. Oral proceedings were held before the Board on 17 April 2012, during which the proprietor filed claims 1 to 9 and description pages 2, 2a, 3, 4 and 11 of the second auxiliary request.

The appellant (patent proprietor) requested that the decision under appeal be set aside and that the patent be maintained in amended form:

- on the basis of the main request filed with the letter dated 7 September 2010,
- or on the basis of the first auxiliary request filed as third auxiliary request with the letter dated 7 September 2010,
- or on the basis of the second auxiliary request filed at the oral proceedings of 17 April 2012.

The respondent (opponent) requested that the appeal be dismissed.

V. **Appellant's requests**

Claim 1 of the **main request** reads as follows (struck-out and bold text maintained as indicated in the text provided by the proprietor):

"1. Power supply apparatus comprising:

at least one controllable source arranged to provide a variable voltage and/or current electrical output;

decoupling converter means for generating an intermediate DC output from the variable voltage and/or current electrical output of said at least

one controllable source which is substantially independent of variations in the electrical output of the source;

output means for generating an AC or DC output to supply a time varying load from the intermediate DC output;

sensor means for monitoring the ~~voltage and/or~~ current of said at least one controllable source and **for monitoring the voltage** of the intermediate DC output and for generating output signals corresponding thereto; and

control means responsive to the output signals to control the operation of said at least one controllable source ~~by limiting the current drawn from the source and by increasing or by decreasing the voltage output of the source~~, to dynamically vary the power output of the source and thereby to supply the power required by the time varying load."

Claim 1 of the **first auxiliary request** corresponds to claim 1 of the third auxiliary request that was the subject of the Boards decision on the first appeal except that the feature defining the rectifier means has been struck out. It reads as follows (struck-out and bold text maintained as indicated in the text provided by the proprietor):



"1. Power supply apparatus comprising:

at least one controllable source (10) arranged to provide a variable voltage and/or current electrical output;

decoupling converter means (12) for generating an intermediate DC output from the variable voltage and/or current electrical output of said at least one controllable source (10) which is substantially independent of variations in the electrical output of the source (10); wherein the controllable source (10) comprises an engine (70) and a generator (72) which provides a variable voltage output to the decoupling converter means (12); wherein the generator is an AC generator which provides a variable voltage, variable frequency AC output to the decoupling converter means;

~~rectifier means for rectifying the AC output of the generator and the decoupling converter means comprising a DC to DC converter for converting the rectified AC output to an intermediate DC output;~~

output means (14) for generating an AC or DC output to supply a time varying load from the intermediate DC output;

sensor means (18, 20, 22) for monitoring the ~~voltage and/or~~ current of said at least one controllable source and **for monitoring the voltage**

of the intermediate DC output and for generating output signals corresponding thereto; and

control means (24, 26, 16) responsive to the output signals to control the operation of said at least one controllable source (10), to dynamically vary the power output of the source (10) and thereby to supply the power required by the time varying load, wherein the control means (24, 26, 16) **control the current drawn from the generator according to a reference current characteristic curve so that there is a reserve power for acceleration between the minimum and maximum speed operating points of the engine**, the sensor means (18, 22) comprising a voltage sensor (18) arranged to monitor the output voltage at the intermediate DC output of the converter means (12), and to increase the speed of the engine (70) to increase the power supplied to the converter means (12) when the voltage of the intermediate DC output drops below a first voltage threshold."

Claim 1 of the **second auxiliary request** corresponds to claim 1 of the third auxiliary request that was the subject of the Board's decision on the first appeal and reads as the first auxiliary request but including the rectifier means feature that was deleted in the first auxiliary request. Claims 2 to 9 of the second auxiliary request are dependent on claim 1.

VI. The appellant's arguments relevant to the present decision may be summarised as follows:

The opposition division was correct in admitting the main request and first auxiliary request into the proceedings. These addressed the issues of insufficiency of disclosure that had been raised by the Board of Appeal in the annex to the summons to oral proceedings in the first appeal. Being absent from those oral proceedings, the proprietor could not adapt the requests then on file to overcome the deficiencies that were discussed, but if such amended requests had been filed at the oral proceedings the Board would have admitted them.

Document D8 was filed late and should not have been admitted into the proceedings because it was not *prima facie* relevant. In particular it did not disclose monitoring the current of the source.

The priority was valid for claim 1 of the second auxiliary request. The priority document disclosed:

- that a "speed sensor 30 monitors the engine speed and generates a speed signal which is applied to a reference current circuit 32" (last paragraph of page 6 and figure 2); and
- "... a reference current signal Vr9i from the reference current circuit 32" (third paragraph of page 7 and figure 2),

The skilled person would realise that the reference current signal Vr9i must be generated using a reference current characteristic curve in the sense of claim 1. Furthermore, the disclosures in the last paragraph of page 4 ("... increase the speed of the prime mover

...") and in the third paragraph of page 6 ("... control loop which varies the speed of the engine 10 and the output of the generator 12 in response to load demand ...") imply acceleration between minimum and maximum speed operating points of the engine.

It had not been proven that document D8 was made available to the public before the priority date of the patent (20 December 1996).

In D8 the inputs to the supervisory control used in the variable speed tests were engine speed, line voltage and delivered power. Any references in D8 to measuring generator power were merely the result of careless use of language. The subject-matter of claim 1 of auxiliary request 2 was novel over document D8, as it did not directly and unambiguously disclose the claimed features that: the apparatus comprises sensor means monitoring the current of the generator; the control means is responsive to output signals which correspond to the generator current; the control means control the current drawn from the generator according to a reference current characteristic curve; and the control means operates to increase the speed of the engine to increase the power supplied to the converter means when the voltage of the intermediate DC output drops below a first voltage threshold. These features defined a different arrangement for controlling the variable speed generator that would not be obvious for the skilled person starting from the disclosure of document D8.

VII. The respondent's arguments relevant to the present decision may be summarised as follows:

The appellant's main and first auxiliary requests should not have been admitted into the proceedings as their filing constituted an abuse of procedure. Remittal to the department of first instance is not to be seen as an opportunity to wipe the slate clean and start afresh. Remittal was obtained on the basis of the then valid third auxiliary request and the continued examination should have been carried out on that basis or on subordinate requests.

Document D8 was not late filed as it was filed with the grounds of appeal of the first appeal in response to the requests filed by the proprietor in preparation for the first oral proceedings before the opposition division. In view of those requests D8 became the closest prior art and was therefore highly relevant, so the opposition division was correct to admit it.

The priority claim was not valid for claim 1 of the second auxiliary request. The reference current circuit and signal disclosed in the priority document did not necessarily imply that a reference current characteristic curve was used. Furthermore, the priority document did not disclose that the current drawn from the generator was controlled so that there was a reserve power for acceleration.

Document D8 was made available to the public before the priority date of the patent (20 December 1996) and, without any doubt, before the date of filing of the patent (19 December 1997). It formed part of the prior

art for, and disclosed all of the features of claim 1 of the second auxiliary request.

The subject-matter of claim 1 of auxiliary request 2 was known from document D8. Document D8 disclosed that the supervisory computer measured engine speed, generator power, and inverter output voltage. The power sensor used to measure generator power sensed both voltage and current in order to determine the power. Figures 6.7 and 6.9 on pages 87 and 88 showed the power/speed relationship and indicated the effect of the generator limit current on that relationship. Also D8 disclosed that the most fuel efficient operation allowable would result in operating at the rated current of the generator down to 900 rpm. This amounted to controlling the generator current according to a straight line reference current characteristic curve.

Even if it were to be considered that D8 disclosed to measure power at the output, rather than at the generator, then this difference would have to be considered an obvious modification for the skilled person given that the inverter efficiency was known (see page 77). The skilled person considering D8 would realise that other sensing set-ups were possible and that signals could be sensed at different parts of the circuit. Furthermore, in the case of a DC load or a mixed AC/DC load there would be no choice but to measure power and hence current at the DC link. Thus, claim 1 of auxiliary request 2 lacked an inventive step.

## Reasons for the Decision

### 1. Main request and first auxiliary request: admissibility

1.1 The Boards of Appeal have derived, in particular from Rule 79(1) EPC, the principle that the proprietor does not have a right to have amendments admitted at any stage of opposition proceedings. At the discretion of the opposition division or the Board of Appeal, amendments can be refused if they are neither appropriate nor necessary (see case law of the Boards of Appeal, 6th edition 2010, VII.D.4.1.2, second paragraph).

1.2 In its decision on the first appeal (T 911/06), the Board found that the main request and first auxiliary request valid at that time offended Article 123(2) EPC (see T 911/06, reasons for the decision, points 7 and 8) and that the patent as granted and the second auxiliary request valid at that time offended Article 83 EPC (see T 911/06, reasons of the decision, points 4 and 9).

Considering the third auxiliary request valid at that time, the Board held that the amendments made to claim 1 did not introduce subject-matter that extended beyond the content of the application as filed (see reasons for the decision, under point 10) and that they restricted the scope of the claim in such a way that the insufficiency of disclosure that had been identified in respect of claim 1 as granted no longer existed (see reasons for the decision, point 11). Hence, the Board passed judgement on the then third auxiliary request at least as regards Articles 123(2) and 83 EPC.

In point 12 of the reasons for the decision, entitled "Remittal to the first instance for further prosecution", the Board decided to remit the case to the department of first instance for further prosecution, noting in particular that the amendments made according to claim 1 of the third auxiliary request and the attempt to introduce into the proceedings a new document (D8: "Variable speed diesel power generation design issues" by Anthony L. Rogers, UMI Number 9639021, Copyright 1996) had created an entirely new situation that had not been considered in the contested [first] decision. It is evident from this reasoning that for the Board the purpose of the remittal was to allow further prosecution on the basis of the new situation that had been instrumental in bringing it about. In other words, the third auxiliary request was to be the basis for the further prosecution, taking due account of the Board's judgement on the issues of Articles 123(2) and 83 EPC.

- 1.3 In the post-remittal proceedings before the opposition division, the proprietor introduced a new main request and a new first auxiliary request (filed as main request and third auxiliary request with letter dated 7 September 2010). These requests correspond to the present main request and first auxiliary request. Claim 1 of each of these two requests has been broadened in scope with respect to claim 1 of the third auxiliary request upon which the remittal had been obtained.

The opposition division admitted these new requests into the opposition procedure and examined them,



finding *inter alia* that the new main request met the requirements of Article 123(2) and 83 EPC (see reasons for the decision, page 2, last paragraph to page 3, third paragraph) and that the new first auxiliary request met the requirements of Article 123(2) EPC (see reasons for the decision, page 4, paragraph entitled "compliance of the first auxiliary request with Article 123(2)"). It is evident from the fact that the opposition division carried out an examination of the new main request and first auxiliary request for the requirements of Article 123(2) and 83 EPC, that by admitting these new requests, the examination had to be re-opened on issues which had already been judged upon in the first appeal proceedings in respect of the request that led to the remittal.

- 1.4 It cannot be the purpose of a remittal to the department of first instance to give the proprietor a free hand to redefine the claimed invention and have the examination start afresh, as that would have the effect of allowing the proprietor to restart the discussion of issues that had been settled by the appeal, even when no new situation has arisen that might justify amending the claims. Furthermore, the overall duration of further opposition and possibly further appeal proceedings after remittal would be likely to severely impair the legitimate interests of the other party and of the general public in having some degree of legal certainty about the existence and scope of the European patent within a reasonable time span. To avoid these problems, the prosecution of the case after remittal must in some way follow on from the situation that existed at the end of the appeal procedure, and that led to the remittal.

In conclusion, the Board holds that in the present case, where after remittal the proprietor filed new requests which required examination to be re-opened on issues that had already been judged upon by the Board of Appeal, without the justification that might be provided, for example, by the proprietor being faced with a new situation, then such requests should be deemed to be inadmissible.

Thus, the Board decided to disregard the appellant's main request and first auxiliary request.

- 1.5 For the sake of completeness, the Board notes that this decision is in line with decision T 796/02, which was relied upon by the respondent (opponent) in his submission that the filing of the new main request of 7 September 2010 constituted an abuse of procedure.

In that case, the patentee, in a first appeal, had obtained a remittal to the opposition division on the basis of a request which contained a feature (g) that was defined in relatively narrow terms. Subsequently, in the second proceedings before the opposition division, the patentee sought to introduce a request in which the feature (g) was more broadly defined (see reasons for the decision, point 7). Requests comprising the more generally defined feature (g) had already been filed during the first appeal procedure, but had been withdrawn. The Board held that by withholding the broader requests for tactical reasons, the patentee had deprived the competent Board of an opportunity to decide thereon. Furthermore, the Board held that as a direct result of the patentee's own tactical choice,

the matter of the appeal proceedings had been limited from the broader version of the claims to a much more restricted subject-matter by limiting the feature (g).

The present case differs from that underlying T 796/02 in that during the first appeal the proprietor did not withdraw any requests which correspond to the present main request and first auxiliary request. However, the proprietor did file various requests in preparation for oral proceedings (i.e. the main request and first to seventh auxiliary requests of 9 October 2009). These requests were filed in response to the communication of the Board dated 27 August 2009 in which the Board informed the parties:

"granted claim 1 covers cases where the controllable source is controlled in response to the current of the intermediate DC output, or in response to the voltage (independently from the current) of the controllable source. It is not clear to the board whether these claimed alternatives are sufficiently disclosed in the patent" (cf. paragraph bridging pages 8 and 9 of the communication of 27 August 2009).

Thus, the proprietor had at least the opportunity during the first appeal to amend his case as he wished to meet the objection that eventually led to the decision of the Board in the first appeal that the requirement of sufficiency of disclosure (Article 83 EPC) was not met by claim 1 as granted and that this insufficiency of disclosure no longer existed in claim 1 of the then third auxiliary request (corresponding to the present second auxiliary request) (see points 4.4, 4.5 and 11 of decision T 911/06).

In this way, the Board considers that as a direct result of the proprietor's own informed choice, the matter, following the first appeal proceedings, was limited from the broader version of the claims (claim 1 as granted) to a more restricted subject-matter by the limiting features added to claim 1 in the third auxiliary request, on the basis of which remittal was obtained.

The board considers that in such circumstances it would not be justified to admit requests that are broader than the third auxiliary request and that could have been presented before the conclusion of the first appeal proceedings.

## **2. Second auxiliary request**

### **2.1 Priority**

Opinion G 2/98 of the Enlarged Board of Appeal established that, in respect of a claim in a European patent application, the priority of a previous application in accordance with Article 87 EPC is to be acknowledged only if the person skilled in the art can derive the subject-matter of the claim directly and unambiguously, using common general knowledge, from the previous application as a whole (see point 9 of the reasons and the conclusion of opinion G 2/98).

In the present case, claim 1 of the second auxiliary request specifies inter alia that the control means "control the current drawn from the generator according to a reference current characteristic curve so that there is a reserve power for acceleration between the

minimum and maximum speed operating points of the engine".

The South African application ZA 96/10787, from which the present application claims priority, does not explicitly mention a reference current characteristic curve and furthermore does not explicitly mention that the current drawn from the generator is controlled according to such a curve such that there is reserve power for acceleration.

Noting that the priority document discloses:

- that a "speed sensor 30 monitors the engine speed and generates a speed signal which is applied to a reference current circuit 32" (last paragraph of page 6 and figure 2); and
- "... a reference current signal Vr9i from the reference current circuit 32" (third paragraph of page 7 and figure 2),

the appellant has submitted that the skilled person would realise that the reference current signal Vr9i must be generated using a reference current characteristic curve in the sense of claim 1. Furthermore, the appellant has argued that the disclosures in the last paragraph of page 4 ("... increase the speed of the prime mover ...") and in the third paragraph of page 6 ("... control loop which varies the speed of the engine 10 and the output of the generator 12 in response to the load demand ...") imply acceleration between minimum and maximum speed operating points of the engine.

The Board has some doubt that the above disclosures necessarily imply the use of a "reference current

characteristic curve". Furthermore, even if this were so, the priority document still does not give any indication that the current drawn from the generator is controlled so that there is a reserve power for acceleration. Indeed, the paragraph spanning pages 9 and 10 discloses that "... the battery 48 provides sufficient energy to meet the peak load demand until the engine speed can increase sufficiently to supply the load fully", which rather implies that the battery provides a reserve of power for acceleration.

For these reasons the Board concludes that from the priority document the skilled person would not directly and unambiguously derive the feature of claim 1 (second auxiliary request) discussed above, and that therefore no priority right can be acknowledged for this claim. Hence, the relevant date for establishing the state of the art (Article 54(2) EPC) is the date of filing of the European patent application itself, i.e. 19 December 1997 (cf. Article 89 EPC).

## 2.2 **Novelty**

2.2.1 Whilst there has been considerable dispute over the question of whether or not document D8 was made available to the public before the filing of the priority application, it is uncontested that it was made available to the public before the date of filing of the European patent application. Therefore, given that the priority date does not apply for claim 1 of the second auxiliary request, the Board finds that for this request document D8 belongs to the state of the art in accordance with Article 54(2) EPC.

2.2.2 As regards the fact that the opposition division took document D8 into account in its decision, thereby implicitly admitting it into the opposition proceedings, the Board notes that the opposition division stated in the decision (page 3, fifth paragraph) the reasons why they considered D8 to be relevant for the opposed patent. In view of that reasoning, the Board can find no fault in the manner in which the opposition division decided to exercise their discretion in admitting D8.

2.2.3 Document D8 is a dissertation on variable speed diesel power generation design issues (see title). The dissertation describes tests that were carried out using an engine test set-up. For steady state tests the test set-up comprised a diesel generator set, a resistive load bank, appropriate sensors and data acquisition (see section 3.2.2 and figure 3.1, pages 16 and 17). For variable speed power system tests a power converter and control system were added to the test set-up (see section 3.4 and its subsections, page 23 onwards). As set out in the introduction (section 1.1, page 2, second paragraph):

*The control package changes engine speed as the load changes. The power converter converts the variable voltage, variable frequency generator power resulting from variable speed operation to constant frequency, constant voltage power.*

According to the last paragraph of section 2.2 (see page 9):

*The control package would provide a variable speed set-point for the governor based on the chosen speed power relationship. If there were a difficult match between the load characteristics*

*and the system capabilities, the controls might also provide a variable excitation current for the generator and/or energy storage. Variable speed operation would result in variable voltage, variable frequency generator power. The power converter would convert this to constant frequency, constant voltage power.*

In section 3.4.2, D8 discloses that:

*Power conversion consists of three separate components: a rectifier, a boost regulator and an inverter .....*

*The 3 phase rectifier converts the variable frequency, variable voltage AC voltage to DC with ripple on it. The voltage ripple is then filtered out with a subsequent filter capacitor. The boost regulator converts the variable DC voltage to the correct voltage needed for the inverter .....*  
*The inverter takes the constant voltage input and provides AC output.*

2.2.4 It is evident from the above citations that document D8 discloses an apparatus that includes:

- an engine and AC generator, which provides a variable voltage, variable frequency AC output;
- a rectifier, that rectifies the AC output of the generator;
- a boost regulator that converts the rectified AC (i.e. DC) output of the rectifier to an intermediate DC output; and
- an inverter that generates an AC output to supply a time varying load from the intermediate DC output.



These features of D8 seem to correspond to the controllable source, rectifier means, decoupling converter means and output means of present claim 1.

- 2.2.5 As regards the claimed feature of ***sensor means for monitoring the current of the controllable source [engine/generator] ... and for generating output signals corresponding thereto***, the Board notes the following:

According to the schedule of the sensors used in the diesel tests, given in Appendix A of document D8, an OSI PC5-32-2 power transducer was used as a power sensor. The characteristics of this device can be ascertained from the Ohio Semitronics document, filed by the proprietor with letter dated 16 March 2012, which describes OSI PC 5 series AC watt transducers. According to this document (see first page, right column, Description, third paragraph) "All models include current sensors that are calibrated with the watt transducers". Furthermore, the sensor used in the model PC5-32-2 is a type C external sensor (see second page, table entitled "3 PHASE 3 WIRE 50/60 Hz MODELS"). Thus, it is evident to the skilled reader that the power sensor used in D8 included a sensor means for monitoring current and for generating output signals corresponding thereto. The question remains, however, what current does D8 disclose as being monitored?

In section 3.4.3, describing the supervisory control computer that was used for the variable speed system tests, D8 states (emphasis added): "The [supervisory] computer comes with an 8 bit analog-to-digital converter on the board. Three of these channels were

used to measure engine speed, **generator power**, and inverter output voltage". This seems to indicate that the power (and hence current) measured was that from the generator. However, in section 3.4.5 "Data Acquisition", D8 states (emphasis added): "Test data collected with the control computer included: **inverter power**, engine speed, line voltage, and fuel flow". This suggests that the power (and hence current) measured was that from the inverter. Similarly, in section 9.3 "Control system Tests", page 154, first paragraph, D8 states (emphasis added): "The A/D channels were used to monitor engine speed, line voltage, and **delivered power**", which seems to confirm that power was measured at the inverter output. For these reasons the Board is not convinced that document D8 unambiguously discloses sensor means monitoring the power (and hence current) of the generator (i.e. controllable source).

Consequently, the Board is also not convinced that document D8 unambiguously discloses the claimed features that:

- the control means is responsive to output signals which correspond to the generator current; and
- the control means control the current drawn from the generator according to a reference current characteristic curve.

2.2.6 A further feature of claim 1 is:

*... the sensor means comprising a voltage sensor (18) arranged to monitor the output voltage at the intermediate DC output of the converter means (12), and to increase the speed of the engine (70) to increase the power supplied to the converter means*

*(12) when the voltage of the intermediate DC output drops below a first voltage threshold.*

Section 5.2.2 of D8 (from page 71), describes the power converter in more detail. The boost regulator is described in the second paragraph, where it is stated that:

*The duty cycle of the IGBT is varied to maintain the DC link voltage at 380 VDC,*

and also:

*The boost regulator has its own control system to control output voltage. The control system has a PI compensator to maintain zero steady state error.*

The figure 5.4 on page 72 shows the schematic of the boost regulator and shows a line feeding back the voltage of the DC link as an input to the integrator/compensator, together with a set point voltage. This implies means for sensing the voltage of the intermediate DC output and generating signals corresponding thereto. However, the Board can find no suggestion in D8 that the control means (as a whole) operates to increase the speed of the engine to increase the power supplied to the converter means when the voltage of the intermediate DC output drops below a first voltage threshold.

2.2.7 In conclusion, the Board finds that document D8 does not directly and unambiguously disclose the claimed features that:

- (a) the apparatus comprises sensor means monitoring the current of the generator;
- (b) the control means is responsive to output signals which correspond to the generator current;

- (c) the control means control the current drawn from the generator according to a reference current characteristic curve; and
- (d) the control means operates to increase the speed of the engine to increase the power supplied to the converter means when the voltage of the intermediate DC output drops below a first voltage threshold.

2.2.8 In the reply to the appeal (letter dated 26 August 2012), the respondent had alleged that claim 1 of auxiliary request 2 lacked novelty also in view of document D6 (WO-A-96/23350). In the oral proceedings before the Board, however, the respondent advised that the novelty of claim 1 of the second auxiliary request was only challenged with respect to D8. The Board sees no reason to question novelty with respect to D6 *ex officio*.

2.2.9 For the reasons set out above, the Board considers that the subject-matter of claim 1 of the second auxiliary request is new in the sense of Article 54 EPC.

### 2.3 **Inventive Step**

2.3.1 The respondent has argued that starting from document D8 the skilled person would realise that other sensing set-ups could be used than those disclosed and control signals could be sensed at various places in the circuit. In particular, it would be obvious to take the power measurements, which are used to control the speed of the engine, at the output of the generator. Furthermore, according to the respondent, document D8 teaches to keep the generator current constant at its

rated current, which amounts to a reference current characteristic curve, albeit a horizontal one.

2.3.2 Even if this were the case, the Board has heard no convincing argument that it would be obvious for the skilled person to adapt the teachings of D8 such that the control means operates to increase the speed of the engine to increase the power supplied to the converter means when the voltage of the intermediate DC output drops below a first voltage threshold. As set out above, the aim in D8 is to keep the DC link voltage (i.e. intermediate DC output voltage) constant using PI compensation. With such an arrangement the Board can see no reason why the skilled person would consider using the apparently constant intermediate DC voltage to control the speed of the generator. The Board concludes that at least this feature is not obvious in view of the cited prior art. Hence claim 1 of auxiliary request 2 meets the requirements for inventive step, Article 56 EPC.

2.4 The respondent has not raised any objection to the dependent claims 2 to 9 or to the amended description and the Board can see no reason to raise any such objection.

2.5 For the reasons set out above, the Board accedes to the appellant's second auxiliary request.

## Order

### For the above reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the department of first instance with the order to maintain the patent in amended form in the following version:

#### Description:

- pages 2, 2a, 3, 4 and 11 filed at the oral proceedings of 17 April 2012,
- pages 5 to 10 of the patent specification

#### Claims:

- 1 to 9 of the second auxiliary request filed at the oral proceedings of 17 April 2012

#### Drawings:

- figures 1 to 14 of the patent specification.

The Registrar:

The Chairman:

U. Bultmann

M. Ruggiu