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Datasheet for the decision of 29 November 2016

Case Number: T 2284/13 - 3.2.01

Application Number: 06253010.0

Publication Number: 1731422

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Language of the proceedings: EN

Title of invention:
Aerial refueling system

Patent Proprietor:
The Boeing Company

Opponent:
Eads Construcciones Aeronauticas S.A.

Headword:

Relevant legal provisions:
EPC Art. 123(2), 84, 56
RPBA Art. 12(4)

Keyword:
added subject-matter (seventh auxiliary request: yes)
clarity (fourth, fifth, sixth auxiliary requests: no)
inventive step (main request, first and third auxiliary requests: no)
admission to appeal proceedings (second auxiliary request: no)

Decisions cited:
T 0495/10

Catchword:

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Case Number: T 2284/13 - 3.2.01

D E C I S I O N
of Technical Board of Appeal 3.2.01
of 29 November 2016

Appellant: (Patent Proprietor)	The Boeing Company 100 North Riverside Plaza Chicago, IL 60606-1596 (US)
Representative:	Boult Wade Tennant Verulam Gardens 70 Gray's Inn Road London WC1X 8BT (GB)
Appellant: (Opponent)	Eads Construcciones Aeronauticas S.A. Avenida de Aragon, 404 28022 Madrid (ES)
Representative:	Stiebe, Lars Magnus Balder Paseo de la Castellana 93 28046 Madrid (ES)
Decision under appeal:	**Interlocutory decision of the Opposition Division of the European Patent Office posted on 10 September 2013 concerning maintenance of the European Patent No. 1731422 in amended form.**

Composition of the Board:

Chairman	G. Pricolo
Members:	C. Narcisi
	S. Fernández de Córdoba

Summary of Facts and Submissions

I. European patent No. 1 731 422 was maintained in amended form by the decision of the Opposition Division posted on 10 September 2013. Against this decision an appeal was lodged by the Opponent and by the Patentee on 8 November 2013 and 19 November 2013 respectively, and the appeal fees were paid. The statement of grounds of appeal was filed by the Opponent and by the Patentee on 14 January 2014 and 17 January 2014 respectively.

II. Oral proceedings took place on 29 November 2016. Appellant I (Opponent) requested that the appealed decision be set aside and the patent be revoked. Appellant II (Patentee) requested that the appealed decision be set aside and the patent be maintained in amended form according to the main request, filed on 17 January 2014 or, in the alternative, according to auxiliary request 1 to 7 (auxiliary request 3 representing the basis for maintaining the patent in amended form according to the appealed decision), filed on 17 January 2014.

III. Claim 1 of the main request and of the first auxiliary request reads as follows:

"An aerial refueling system (10) for an aircraft, comprising:
at least one fuel tank (24) positioned in at least an aircraft wing operable to store a volume of fuel;
a refueling connection (20) remotely located from the at least one fuel tank;
at least two fuel pumps (54, 56) operable to transfer fuel from the at least one fuel tank to the remotely located refueling connection;

at least one electrically controlled valve (60) having each of an open position permitting fuel flow and a closed position isolating fuel flow between the tank and the refueling connection; and
a computer system (46) operable to automatically vary operation of any quantity of the fuel pumps and control the electrically controlled valve between one of the open and closed positions during transfer of fuel to the refueling connection."

Claim 1 of the second auxiliary request differs from claim 1 of the main request in that the wording "during transfer of the fuel to the refueling connection" is replaced by the wording "during transfer of the fuel to the refueling connection, wherein the computer system is operable to control automatically any quantity of the of the pumps and valves during normal operation, thereby eliminating the need for manual control of any of the features of the aircraft refueling system during normal fuel transfer".

Claim 1 of the third auxiliary request differs from claim 1 of the main request in that the wording "during transfer of the fuel to the refueling connection" is replaced by the wording "during transfer of the fuel to the refueling connection by using signals from each of of a pressure transducer and a flow meter to determine when to energise selected pumps or when to open or shut selected valves".

Claim 1 of the fourth auxiliary request differs from claim 1 of the main request in that the wording "during transfer of the fuel to the refueling connection" is replaced by the wording "during transfer of the fuel to the refueling connection, and wherein the aerial refueling system is arranged such that fuel can be

directed by the computer system to or from any tank individually or simultaneously".

Claim 1 of the fifth auxiliary request reads as follows:

"A refueling aircraft (12), comprising:
a plurality of fuel tanks each containing a fuel, including:
a first wing tank (34, 36) and a second wing tank (34, 36) cross connected by a connecting header (22);
a forward auxiliary fuel tank (24) connected to the connecting header;
a center wing tank (26) connected to the connecting header and separated by a front spar (28) from the forward auxiliary tank; and a rear auxiliary fuel tank (30) connected to the connecting header and separated from the center wing tank by a rear spar (32);
a first double wall fuel pipe (48) positioned proximate the forward auxiliary fuel tank space and connecting the forward auxiliary fuel tank to the connecting header;
a second double wall fuel pipe (86) positioned proximate the rear auxiliary fuel tank space and connecting the rear auxiliary fuel tank to the connecting header;
a single wall manifold (64) connecting the plurality of fuel tanks;
a refueling connection (20, 38, 40, 42, 44) remotely located from the plurality of fuel tanks;
at least two pumps (54, 56, 68, 70, 72, 74, 94, 96) operable to transfer the fuel from between a predetermined one of the plurality of tanks to the refueling connection;
a plurality of electrically controlled valves (60, 82, 100, 108, 130, 148) having each of an open position

permitting fuel flow and a closed position isolating fuel flow between a predetermined one of the plurality of tanks and the refuelling connection, an individual one of the electrically controlled valves positioned to isolate each of the first and second double wall pipes; and
a computer system (46) operable to automatically control transfer of the fuel to the refueling connection, and to vary operation of any quantity of the fuel pumps and control the electrically controlled valve between one of the open and closed positions."

Claim 1 of the sixth auxiliary request differs from claim 1 of the fifth auxiliary request in that the wording "between one of the open and closed positions" is replaced by the wording "between one of the open and closed positions; and wherein the connecting header comprises a plurality of single wall manifolds within the center wing tank, including
a first manifold (64) connected to the first double wall fuel pipe at the front spar;
a second manifold (80) connected to the second double wall fuel pipe at the rear spar;
a wing fuel manifold (132) connected to each of the first and second wing tanks; and
a supply header (48, 112, 116) connected to the refueling connection".

Claim 1 of the seventh auxiliary request reads as follows:

"An aerial refueling system (10) for an aircraft comprising:
at least one fuel tank (24) positioned in at least an aircraft wing operable to store a volume of fuel;

a refuelling connection (20) remotely located from the at least one fuel tank, and comprising a refueling boom (38), a refueling hose assembly (40) and one of a first and second wing mounted aerial refueling pod (42, 44);
at least two fuel pumps (54, 56) operable to transfer the fuel from the at least one fuel tank to the remotely located refuelling connection;
a port wing (16) including a port wing tank (34) and a starboard wing (18) including a starboard wing tank (36), wherein the fuel from each of the port and starboard wing tanks is transferable to at least one of the refueling boom (38), the refueling hose assembly (40), and one of the first and second wing mounted aerial refueling pods (42, 44);
a forward auxiliary fuel tank (24), a center wing tank (26) separated by a front spar (28) from the forward auxiliary fuel tank (24) and a rear auxiliary fuel tank (30) separated from the center wing tank (26) by a rear spar (32), wherein the fuel from any of the forward auxiliary fuel tank (24), the center wing tank (26), and the rear auxiliary fuel tank (30) is transferable to the refueling connection;
at least one electrically controlled valve (60) having each of an open position permitting fuel flow and a closed position isolating fuel flow between the tank an d the refueling connection;
and
a computer system (46) operable to automatically vary operation of any quantity of the fuel pumps and control the electrically controlled valve between one of the open and closed positions during transfer of the fuel to the refueling connection; and
wherein the computer system is operable to automatically operate a predetermined quantity of the fuel pumps based on input of a predetermined aircraft to be refuelled, to open or close selected ones of the

electrically controlled valves and to energize one or more of the fuel pumps to automatically balance a fuel volume in each of the plurality of tanks of the aircraft, thereby controlling wing bending forces resulting from fuel in at least a fuel tank in each of the wings or thereby controlling a center of gravity of the aircraft, and to use signals from each of a pressure transducer and a flow meter to determine when to energize the selected fuel pumps or when to open or shut the selected valves."

IV. The Opponent's submissions may be summarized as follows:

The subject-matter of claim 1 of the main request is not inventive over document D5 (Air Force Technology, "A310 MRTT Multirole Tanker Transport, Europe", http://web.archive.org/web/20040407041 621/http://ww.airforce-technology.com/projects/mrtt/ (publicly available on 7 April 2004)) or D5' (Air Force Technology, "A310 MRTT Multirole Tanker Transport, Europe", http.// www.airforce-technology.com/projects/mrtt (copy extracted from the Internet on 23 February 2009)), in view of the skilled person's common general knowledge and, if necessary, of further document D22 (JSSG-2001 "Department of Defense Joint Service Specification Guide-Air Vehicle" (15 March 2000)). D5' constitutes the currently available version of D5 on the world wide web (D5 and D5' thus disclosing the same subject-matter), and it has been used to extract the expanded figures that were already published in D5, lined up in the margin on first and second pages of D5 (D5 was extracted from an archive which unfortunately did not allow to expand the figures in the margin, although this option ("click to expand") was clearly indicated). D5/D5' differs from claim 1 only in that it does not

disclose feature (i) (i.e. "a computer system (46) operable to automatically vary operation of any quantity of the fuel pumps and control the electrically controlled valve between one of the open and closed positions during transfer of fuel to the refueling connection"). However, feature (i) is merely a direct result of automating the air refueling system of D5/ D5', which the skilled person would do in an obvious manner. Computer control (or by a microprocessor) is commonly known to the skilled person in this technical field (see e.g. documents D2 (US-A-5 321 945) and D30 (GB-A-1 307 671), whereby the valves would be electrically controlled by the computer system and the number of pumps would be automatically varied depending on the specific situation and/or aircraft type. Varying the number of operating pumps by manual control is known per se (see e.g. D22, II 209) and is part of the skilled person's common general knowledge, this technical measure being anyway obvious in view of D22. Thus all of the claimed features are merely a result of automating the known refueling system of D5/D5', taking account of the skilled person's common general knowledge or alternatively considering the additional obvious combination with D22 and the skilled person's common general knowledge.

The second auxiliary request should not be admitted to the appeal proceedings for it was withdrawn by the Patentee during opposition proceedings.

Claim 1 of the third auxiliary request lacks an inventive step, for the further added feature (ii) (i.e. "by using signals from each of of a pressure transducer and a flow meter to determine when to energise selected pumps or when to open or shut selected valves") cannot contribute to inventive step

in view of D5/D5' and the skilled person's common general knowledge, or alternatively further considering D30 (GB-A-2 219 787). In effect, it would be obvious for a person skilled in the art, based on its common general knowledge, to use a known flow meter to measure flow in order to e.g. determine when to stop refueling and to measure pressure by means of a known pressure transducer in order e.g. to avoid excessive pressure or a dangerous pressure surge in the pipelines of the refueling system. These technical measures are moreover disclosed in D30 (page 13, line 27-page 14, line 9), thus anyway suggesting feature (ii) to the skilled person as an obvious measure to control flow and pressure.

The subject-matter of claim 1 of the fourth auxiliary request is not clear. The feature reading "and wherein the aerial refueling system is arranged such that fuel can be directed by the computer system to or from any tank individually or simultaneously" (hereinafter designated as feature (iii)) being very broad and general its technical implications are not clear. Indeed, it is not derivable from claim 1 whether this feature is intended to apply e.g. to air refueling or to balancing fuel in the plurality of tanks and particularly in the wing tanks. Finally, this feature is purely functional describing merely a result to be achieved without indicating the necessary technical means.

The subject-matter of claim 1 of the fifth auxiliary request is not clear. In particular, it is unclear whether feature (iv) (i.e. "a plurality of electrically controlled valves (60, 82, 100, 108, 130, 148) having each of an open position permitting fuel flow and a closed position isolating fuel flow between a

predetermined one of the plurality of tanks and the refuelling connection, an individual one of the electrically controlled valves positioned to isolate each of the first and second double wall pipes") defines a first type of valves ("isolating fuel flow between a predetermined one of the plurality of tanks and the fuel connection") and a second (different) type of valves ("positioned to isolate each of the first and second double wall pipes"), or whether the second type of valves is merely a subset of the set formed by the first type of valves, in this latter case the second type of valves performing both said functions as implied by feature (iv). In addition, the wording "a predetermined one of the plurality of tanks" apparently implying isolation of only one tank from the refueling connection (through the first and possibly also the second type of valves), it is not clear whether support is at all provided therefor in the patent specification (hereinafter designated as EP-B). This lack of clarity is further aggravated in claim 1 by the use of the term "refueling connection" which is intended to encompass both the refueling receptacle 20 as well as the refueling boom 38.

Claim 1 of the sixth auxiliary request likewise includes said feature (iv) and therefore lacks clarity.

The subject-matter of claim 1 of the seventh auxiliary request includes subject-matter extending beyond the content of the application as filed (the published patent application is hereinafter designated as EP-A). Indeed, the feature reading "wherein the computer system is operable to automatically operate a predetermined quantity of the fuel pumps based on input of a predetermined aircraft to be refuelled, to open or close selected ones of the electrically controlled

valves and to energize one or more of the fuel pumps to automatically balance a fuel volume in each of the plurality of tanks of the aircraft" (hereinafter designated as feature (v)) was not originally disclosed, for in EP-A it is not disclosed that the "electrically controlled valves" implied by feature (v) are the same as those "permitting ... and ... isolating fuel flow between the tank and the refueling connection" as previously defined in the same claim.

V. The Patentee's submissions may be summarized as follows:

The subject-matter of claim 1 of the main request involves an inventive step in view of the cited prior art. First, only D5 should be taken into account as prior art, for D5' is not a pre-published document. There are discrepancies in the text of D5 and D5', these texts being not equivalent, thus there could be further discrepancies in the figures. This cannot be verified by the Patentee, given that the original documents are not any more accessible on the Internet. Therefore, the burden of proof lies entirely with the Opponent and the case has to proven up to the hilt, according to established case law.
Anyway, even regarding D5/D5' as prior art the claimed subject-matter nevertheless involves an inventive step. Indeed feature (i) (i.e. "a computer system (46) operable to automatically vary operation of any quantity of the fuel pumps and control the electrically controlled valve between one of the open and closed positions during transfer of fuel to the refueling connection") would not be obvious for the skilled person. This feature entails the possibility of varying operation of <u>any quantity</u> of pumps among the pumps included in the air refueling system. This is more than

merely turning on or off all the pumps or just a number of them. D22 likewise does not suggest feature (i), for in D22 only successively switching on a first and a second pump is described. By contrast, the claimed feature implies the capability of operating any number of pumps and of varying operation of the number of pumps in any specific manner. In addition, D22 even appears to teach away from such a technical measure, given that it is explicitly not recommended. Further, feature (i) involves the automation of a complex system such as an air refueling system and this is not an obvious and straightforward task, for it requires automation of several components including, but not exclusively, electrically controlled valves and pumps. Consequently, for the assessment of inventive step in the present case it is neither sufficient nor appropriate to look at single isolated issues, such as relating to valves or pumps, but instead the "bigger picture" has to be considered as entailed by the automatisation of a large and complex system.

The second auxiliary request should be admitted to the appeal proceedings since it was not abandoned during the opposition proceedings. The Patentee merely withdrew this request during oral proceedings before the Opposition Division for reasons of procedural expediency. Nevertheless the Patentee never waived its right to submit this request during appeal proceedings.

The subject-matter of claim 1 of the third auxiliary request involves an inventive step in view of the cited prior art. In effect, feature (ii) (i.e. "by using signals from each of of a pressure transducer and a flow meter to determine when to energise selected pumps or when to open or shut selected valves"), in the same way as feature (i), would not be obvious for the

skilled person and likewise contributes to inventive step. The claimed features cannot merely be seen as a simple collection of individual features but have to be considered as interacting together to form a larger unit. Documents D22 and D30 do not constitute part of common general knowledge in the specific technical field and the skilled person would not combine D5/D5' with D22 and D30 since it would lack an incentive to do so. Indeed, such a combination amounts to an unwarranted and arbitrary mosaic-like combination of documents. What is more, D22 teaches away from the claimed invention (see above) and D30 is related to a refueling system solely comprising a refueling pod and no wing tanks or multiple pumps. Likewise, D30 does not teach an overall computerized control system apt for controlling air refueling. Also, the combined advantageous effect of using measurements from the pressure transducer and the flow meter as claimed, and as further detailed in EP-B (see paragraphs [0024], [0058]), is not derivable from D30. Hence, the skilled person would not turn in an obvious way to D22 and D30 to improve or automate the refueling system of D5/D5', and even if it did the subject-matter of claim 1 would thereby not be obtained.

The subject-matter of claim 1 of the fourth auxiliary request fulfils the requirement of clarity. Feature (iii) (i.e. "wherein the aerial refueling system is arranged such that fuel can be directed by the computer system to or from any tank individually or simultaneously") makes clear that the effect of directing fuel to or from any tank individually or simultaneously is achieved by the computer system being able to control any number of the pumps and the electrically controlled valves. In addition, in the event that feature (iii) is construed as a functional

feature it is noted that using functional features is permissible in specific situations, if necessary.

Claim 1 of the fifth auxiliary request complies with the requirement of clarity. In effect feature (iv) defines a first set of valves ("a plurality of electrically controlled valves (60, 82, 100, 108, 130, 148) having each of an open position permitting fuel flow and a closed position isolating fuel flow between a predetermined one of the plurality of tanks and the refuelling connection") and a second set of valves ("an individual one of the electrically controlled valves positioned to isolate each of the first and second double wall pipes"), which is defined as a subset of the first broader set of valves. Further, the wording "permitting fuel flow and ... isolating fuel flow between a predetermined one of the plurality of tanks and the refuelling connection" does not necessarily entail isolating or permitting flow between only one tank and the refuelling connection, the other tanks thus being unaffected. Quite to the contrary, the other tanks (or some of them) might be affected as well. Finally, the refuelling connection as claimed clearly encompasses all external connections capable of receiving or transferring fuel, for the refueling aircraft both receives and transfers fuel, according to the specific situation. This is in complete agreement with feature (iv) and with the functions performed by the electrically controlled valves as defined therein.

The arguments relating to claim 1 of the fifth auxiliary also apply to claim 1 of the sixth auxiliary request, which likewise includes feature (iv).

The subject-matter of claim 1 of the seventh auxiliary request does not extend beyond the content of the

application as filed. Indeed, feature (v) is derived from EP-A (see paragraph [0007]) stating that "the system is further operable to open or close selected isolation valves and energize one or more of the pumps to automatically balance a fuel volume in each of a plurality of tanks of the aircraft, thereby controlling wing bending forces resulting from fuel in at least a fuel tank in each of the wings or a center of gravity of the aircraft". Therefore it is obvious that the selected isolation valves defined hereby also constitute electrically controlled valves apt for opening and closing flow between a tank and the refueling connection, as previously defined in the claim. Moreover, there is only one set of electrically controlled valves defined in EP-A (see EP-A, paragraph [0005]) in the paragraphs preceding paragraph [0007].

Reasons for the Decision

1. The appeals are admissible.

2. In the Board's view there cannot be any reasonable doubt that the Internet publications D5' and D5 disclose one and the same air refueling system. Both D5 and D5' illustrate the Airbus Industrie A310 MRTT wide-bodied multi-role tanker transport aircraft, the texts including technical features and data of the refueling system corresponding in a 1:1 fashion, the texts being structured and formatted in the same way (same paragraphs) and both documents having identical (unexpanded) figure captions. The (unexpanded) figures in the margin permit e.g. to identify 1:1 identical refueling pods or fuel tank location (see figure "for the air-to-air refuelling (Tanker) role") and identical fuel lines (see figure "the MRTT fuel systems"). Obviously, not all features in the (unexpanded) figures

of D5 and D5' can be compared due to the their considerably small size. The only discrepancies to be noted between the two texts relate to non-technical features, i.e. to an updating in D5' informing that "four A310 MRTT aircraft are in service with the German Air force" and that "two A310 aircraft of the Canadian Air Force have been converted to the MRTT configuration" (see D5', page 1). By contrast, in D5 the corresponding older text stated that "the German Air force has ordered four A310 MRTT aircraft" and that "the Canadian Air Force has ordered two MRTT Aircraft". This however does not affect the information in D5 and D5' concerning purely technical aspects of the refueling system. Consequently, the Board is convinced that the expanded figures of D5' also form part of the disclosure of D5 in the sense that by expanding the (unexpanded) figures of D5, the same expanded figures as shown in D5' would have been obtained at the time at which D5 was made available to the public, which time is, undisputedly, before the relevant date of the patent in suit. Accordingly, when considering the prior art disclosure of D5, also the expanded figure "the MRTT fuel system" shown in D5' must be regarded as forming part of that disclosure.

3. The subject-matter of granted claim 1 (main request) does not involve an inventive step in view of D5/D5' and the skilled person's common general knowledge. The only difference between the claimed subject-matter and D5/D5' undisputedly consists of feature (i) (i.e. "a computer system (46) operable to automatically vary operation of any quantity of the fuel pumps and control the electrically controlled valve between one of the open and closed positions during transfer of fuel to the refueling connection"). D5/D5' clearly discloses fuel pumps and control valves (see D5', page 2, second

paragraph; expanded figure "the MRTT fuel systems), constituting part of an air refueling system comprising an operator station (located in the cockpit), a fuel control panel, with fuel pump controls and fuel quantity indicators, and a dual pod control panel".

The "fuel management system and the centre of gravity computer ensure automatic tank sequencing" (D5', page 2, "Tanker Systems"). This evidently entails automated operation of respective control valves and fuel pumps. Whilst D5/D5' does not explicitly disclose electrically operated control valves, nonetheless using electrical control valves in "automatic tank sequencing" would be obvious for the skilled person. The automated control of electric control valves and fuel pumps, which is already implemented for "tank sequencing" (as implied by feature (i)), would be extended by the skilled person in a straightforward and obvious manner to the control of fuel transfer to the refueling connection (as implied by feature (i)). Contrary to the Patentee's allegations, the automation of known systems cannot in general involve by itself an inventive step, unless evidence is provided that particular technical difficulties had to be overcome and corresponding solutions provided.

The feature reading "a computer system (46) operable to automatically vary operation of any quantity of the fuel pumps" would be obvious for the skilled person in view of the fact that the air refueling system of D5/ D5' includes a plurality of fuel tanks and of fuel pumps associated thereto (see D5', expanded figure "the MRTT fuel systems"), and considering that operation of one or more fuel pumps may be necessary in specific situations, e.g. for specific aircraft types or to increase the fuel flow rate in order to speed up the

refueling process. This commonly is known to the skilled person, as demonstrated by D22 (see D22, II 209). D22 does not teach away from varying the number of operating pumps during refueling since it clearly states that this was appropriate for specific aircraft types. Consequently, the subject-matter of claim 1 lacks an inventive step (Article 56 EPC).

4. The subject-matter of claim 1 of the first auxiliary request lacks an inventive step, for it is identical with that of claim 1 of the main request (see above reasons).

5. The second auxiliary request was withdrawn by the Patentee during oral proceedings before the Opposition Division (see minutes, page 3, point 14). The Board decided to exercise its discretionary power pursuant to Article 12(4) RPBA (Rules of Procedure of the Boards of Appeal) not to admit this request to the appeal proceedings, given that the Patentee deliberately chose to withdraw this request before the Opposition Division, thereby avoiding a reasoned decision thereon, see e.g. T 495/10, point 2.1.

6. The subject-matter of claim 1 of the third auxiliary request lacks an inventive step in view of D5/D5' and the skilled person's common general knowledge. Feature (ii) (i.e. "by using signals from each of of a pressure transducer and a flow meter to determine when to energise selected pumps or when to open or shut selected valves"), in conjunction with feature (i), cannot contribute to inventive step. In effect, as stated by the Opponent, it would be obvious for the skilled person to use a known flow meter to measure flow in order to e.g. determine when to stop refueling and to measure pressure by means of a known pressure

transducer in order e.g. to avoid excessive pressure or a dangerous pressure surge in the pipelines of the refueling system. The mere use of a flow meter and a pressure transducer in an air refueling system as claimed (i.e. in conjunction with feature (i)) represents a very general technical measure which is moreover known per se from D30. The skilled person would therefore, if needed, likewise obviously derive this feature by consulting the prior art, seeking solely general information or advice. Hence, the skilled person would obviously implement feature (ii) in order to improve control of fuel pressure and to improve control of the refueling process (e.g. to obtain precise indications as to its termination) (Article 56 EPC).

7. Claim 1 of the fourth auxiliary request lacks clarity, for feature (iii) (i.e. "wherein the aerial refueling system is arranged such that fuel can be directed by the computer system to or from any tank individually or simultaneously") is completely silent about its intended technical use and purpose. It is not derivable from the claim whether, for instance, this feature has to be understood as being implemented for performing air refueling (during transfer of fuel to another aircraft) or for balancing of fuel in the plurality of tanks and particularly in the wing tanks. The feature is so broadly and generally stated as to encompass any transfer of fuel from or to any tanks whatsoever to or from any other tanks respectively (or directly to a refueling connection), in any given specific situation, which clearly does not make any technical sense. The passages of the description in EP-B on which this feature is based (EP-B, paragraph [0011]) do not shed light on these ambiguities. The requirements of Article 84 EPC are therefore not met.

8. The subject-matter of claim 1 of the fifth auxiliary request lacks clarity. Feature (iv) (i.e. "a plurality of electrically controlled valves (60, 82, 100, 108, 130, 148) having each of an open position permitting fuel flow and a closed position isolating fuel flow between a predetermined one of the plurality of tanks and the refuelling connection, an individual one of the electrically controlled valves positioned to isolate each of the first and second double wall pipes") does not make clear whether the wordings "a plurality of electrically controlled valves" and "an individual one of the electrically controlled valves" define two distinct sets of valves, or whether the second set forms a subset of the first set. In the latter case, as noted by the Opponent, it does likewise not result clearly from the disclosure of EP-B how a valve from the second set (which is "positioned to isolate each of the first and second double wall pipes") would also be able to isolate flow between a "predetermined" tank and the "refuelling connection". This all the more, given that the term "refuelling connection" as used in feature (iv) is very broad and encompasses both air refueling receptacle 20 and refueling boom 38 (see also EP-B, paragraph [0016]), and considering that the term "a predetermined one" is commonly construed as not including further tanks beyond the "predetermined one". Finally, in respect of feature (iv) it is further not clear, based on the description of EP-B, how a valve belonging to the first set of valves could possibly isolate fuel flow between a predetermined tank and both said refueling receptacle and said refueling boom. For all these reasons claim 1 does not comply with Article 84 EPC.

Claim 1 of the sixth auxiliary request likewise lacks clarity since it comprises aforesaid feature (iv) of claim 1 of the fifth auxiliary request.

9. The subject-matter of claim 1 of the seventh auxiliary request 7 contravenes Article 123(2) EPC. Feature (v) (i.e. "wherein the computer system is operable to automatically operate a predetermined quantity of the fuel pumps based on input of a predetermined aircraft to be refuelled, to open or close selected ones of the electrically controlled valves and to energize one or more of the fuel pumps to automatically balance a fuel volume in each of the plurality of tanks of the aircraft") refers to "selected ones of the electrically controlled valves", which valves are already defined in the previous feature of claim 1 reading "at least one electrically controlled valve (60) having each of an open position permitting fuel flow and a closed position isolating fuel flow between the tank and the refueling connection". However, there is no basis in EP-B (or in EP-A) (see for instance paragraph [0009] in EP-B) for these "selected ones of the electrically controlled valves" to be part of the set of the previously defined valves, which control fluid flow between the tank and the refueling connection. Specifically, the passage in EP-B (paragraph [0028]) describing balancing of volume of fuel in the port and starboard wing tanks (according to feature (v)) discloses a specific "drain isolation valve 138" designed to drain fuel by gravity flow from the wing tank into the center wing tank, controlled by the computer system. This drain valve performs no function of controlling fluid flow between the tank and the refueling connection. Thus this passage also cannot provide a basis for feature (v).

Order

For these reasons it is decided that:

1. The appealed decision is set aside.

2. The patent is revoked.

The Registrar: The Chairman:

I. Aperribay G. Pricolo

Decision electronically authenticated