Intellectual Property Office

BL O/041/14

24 January 2014

PATENTS ACT 1977

APPLICANT	Tecniq's Ltd
ISSUE	Whether patent application number GB 1204435.0 complies with sections 1(1)(c) and 14(3) of the Act
HEARING OFFICER	A Bartlett

DECISION

Introduction

1 Primarily, this decision concerns the issue of whether the invention claimed in UK patent application GB 1204435.0 is sufficiently disclosed as required by section 14(3) of the Patents Act 1977 (the Act) and has an industrial application as required by section 1(1)(c) of the Act.

2 The application, entitled "Charging unit for HYBRID electrically powered aircraft", was filed in the name of Tecniq's Limited on 13 March 2012. The application claims priority from GB 1104733.9 filed 21 March 2011. On 20 March 2012, the Office wrote to the applicant with the offer of a refund since the application appeared, prima facie, to have a lack of technical disclosure and also a lack of novelty. However, no response to this offer was received and the application was forwarded to search and examination in the normal fashion. The application was published as GB 2489311 on 26 September 2012.

3 During the course of substantive examination the applicant has been unable to convince the examiner that the application complies with section 1(1)(c) of the Act, with the examiner maintaining throughout that the invention is not capable of industrial application since it could not be made to work in any practical sense. The examiner was also of the opinion that the invention is not novel under section 1(1)(a) of the Act, contained added subject matter in contravention of section 76 and was not clear in scope as required by section 14(5)(b).

4 Despite several rounds of correspondence and amendments, the applicant and the examiner were unable to resolve these issues and a hearing was appointed to help me decide the outstanding issues. That hearing took place on 14 October 2013. Mr Christopher Lee, the inventor, attended for the applicant with a hearing assistant, Mr Andy Hole, also attending.

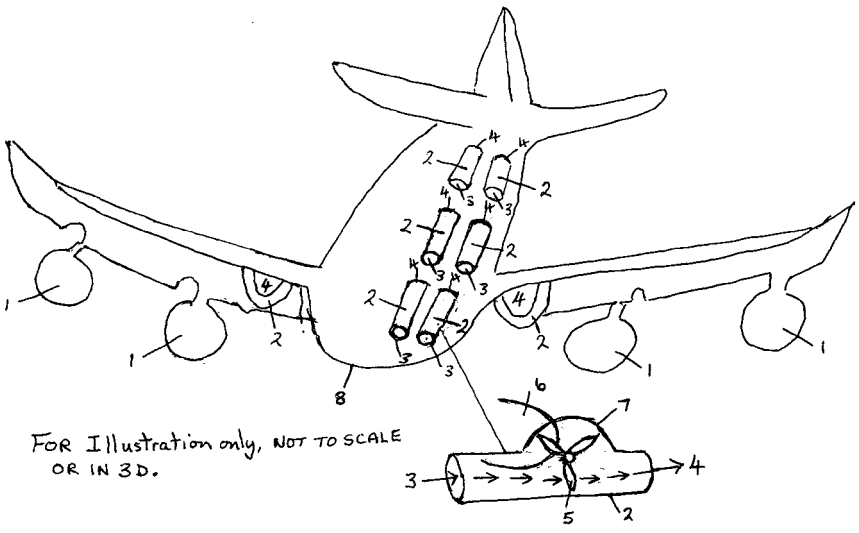
5 I am extremely grateful to Mr Lee for the skeleton arguments he filed on 2 October 2013 and for the submissions he made during the hearing. I confirm that I have taken these (and all the arguments put forward in the correspondence) into account in reaching my decision.

6 I agreed with Mr Lee that I would focus my attention on the sufficiency and inductrial application issues at the hearing and in this decision since a finding against the applicant on those issues would probably be fatal to the application. Consequently, should I find in favour of the applicant I will need to remit the application to the examiner for further consideration, especially in relation to sections 1(1)(a) and 1(1)(b), 14(5) and 76.

7 At the hearing a great deal of the discussion related to the sufficiency of the disclosure, as required by section 14(3) of the Act. However I noted that an objection under this section of the Act had not been formally raised by the examiner. I therefore invited Mr Lee to make formal submissions with respect to this section of the Act. These submissions were duly received on 5 November 2013 and I confirm that I have fully considered them when making my decision.

The application

8 The invention of the present application relates to a hybrid powered aircraft having petrol, diesel or argas (sic)[1] fuel engines with electric motors to power the propulsion means, such as propellers. The electric motors powered by batteries which can be charged by means of encapsulated turbines which rotate and generate electric power as the aircraft is moving. The aircraft has circuitry which allows the engines to be switched between the fuel engines and the electric motors. The invention is said to save fuel and therefore reduce carbon emissions. The only drawing is shown below:



[1] Presumably "avgas" is intended.

9 As can be seen in the above drawing, enclosures 2 have an inlet 3, a turbine 5 and an outlet 4. As the aircraft flies, air enters the enclosures and causes the turbine rotors to rotate. The turbines generate electrical power which is used to charge batteries, the batteries in turn providing energy to power electric motors that, according to the description, turn the aircraft's propellers or "electric jet engines"

The claims

10 The claims forming the basis for the hearing were filed 9 November 2012. There are ten claims in total, only one of which is a fully independent claim. Independent claim 1 reads as follows:

> *1. A charging unit for Hybrid electrically powered Aircraft, Characterized by using Petrol, Diesel or Argas fuel engines with electric motors to power propellers known as electric flight power; having electric batteries to power the electric flight power, incorporating wind air turbines as the only means to charge the electric batteries.*

The law and its interpretation

11 Section 1(1) of the Patents Act 1977 sets out a number of requirements that an invention must satisfy if a patent is to be granted. It reads as follows:

> *Section 1(1)*
> *A patent may be granted only for an invention in respect of which the following conditions are satisfied, that is to say -*
> *(a) the invention is new;*
> *(b) it involves an inventive step;*
> *(**c) it is capable of industrial application;***
> *(d) the grant of a patent for it is not excluded by subsections (2) and (3)or section 4A below;*
> *and references in this Act to a patentable invention shall be construed accordingly.*

12 Section 4(1) of the Patents Act 1977 defines "capable of industrial application":

> *Section 4(1)*
>
> *An invention shall be taken to be capable of industrial application if it can be made or used in any kind of industry, including agriculture.*

13 It is noted that processes or articles alleged to operate in a manner which is clearly contrary to well-established physical laws, such as perpetual motion machines, are regarded as not being capable of industrial application.

14 Section 14(3) of the Patents Act 1977 reads:

> *Section 14(3)*
> *The specification of an application shall disclose the invention in a manner which is clear enough and complete enough for the invention to be performed by a person skilled in the art.*

15 Section 14(3) is one of the provisions which is intended to have, as nearly as practicable, the same effect as the corresponding provisions of the EPC, PCT and CPC. A.83 EPC and a.5 PCT require the invention to be disclosed "in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art".

16 It is established practice that this provision of the Act means the applicant must ensure that, at the time of filing, the disclosure of his or her invention is clear and complete with respect of the invention defined in the claims. This means that the specification must disclose the essential features of the invention in sufficient detail for the skilled person to be able to put the invention into practice.

17 If the disclosure of the invention claimed is not clear and complete enough, then either the application must be refused or the claims restricted to matter that is adequately disclosed. Any deficiencies in the specification cannot be rectified by adding technical matter after filing as this would contravene section 76 of the Act.

Assessment

18 I can fully appreciate why the examiner has reported that the application fails to comply with a broad range of requirements of the Act. The claims, which are of course the starting point for defining the invention, are not precisely defined and it is difficult to determine their scope. The description, which is often the source of valuable material for interpreting and clarifying the claims, is very short and does not provide very much detail. Furthermore, some of the material it does contain is at best difficult to understand and often hard to square with the invention. But as I have made clear above I will primarily focus on whether the specification provides sufficient information to allow the skilled person to work the invention defined in the claims and the associated issue of whether the invention is capable of industrial application. As at the hearing I will focus on claim 1.

19 The first thing I need to do is construe claim 1 since its meaning is not immediately clear. The correct approach to adopt when construing a claim is that set down by the House of Lords in *Kirin-Amgen*[2] where Lord Hoffman said:

> *"The question is always what the person skilled in the art would have understood the patentee to be using the language of the claim to mean." [Paragraph 34]*

20 According to the preamble to claim 1, the invention is "a charging unit for a Hybrid electrically powered Aircraft". What constitutes a "hybrid electrically powered Aircraft", whether such an aircraft was feasible and whether the invention could be put into practice at the filing date from the information provided in the specification was the subject of much of the discussion in the correspondence between the examiner and the applicant during the examination process. The description provides some assistance in this respect albeit that it includes reference to an "electric jet engine" the meaning of which is unclear to me as it was to the examiner and which is no longer referred to in claim 1 as amended.

21 The remainder of claim 1 itself though is in my view helpful in determining what is meant by a hybrid powered aircraft – it is an aircraft where the propulsion can be

[2] Kirin-Amgen Inc & Ors v Hoechst Marion Roussel Ltd & Ors [2004] UKHL 46 (21 October 2004)

provided by a hydrocarbon fuelled engine or by battery powered electric motors. I note in this respect that the hydrocarbon fuelled propulsion element in the claim is not limited to gas turbine engines (of which jet engines are a subset). That interpretation of "hybrid powered aircraft" is entirely consistent with the way that expression seems to be used in the art as exemplified by some of the prior art documents cited by the examiner and a number of papers[3,4] that came to light during my investigations prompted by references from Mr Lee at the hearing.

22 I also need to address what limit the hybrid nature of the aircraft referred to in claim 1 imposes upon the charging unit to which claim 1 is directed. The word "for", when used in this context is generally interpreted as meaning "suitable for" and would not strictly limit the turbine to use in a hybrid electrically powered aircraft. But in my view the skilled person would appreciate from the entire teaching of the specification that the charging unit of claim 1 is inextricably linked to the hybrid aircraft that it is said to be used in – the charging unit is part of the aircraft, is reliant on movement of the aircraft for it to operate and the charge it provides feeds batteries that power electric motor driven operation of the aircraft.

23 Taking these factors into account I construe claim 1 as defining a charging unit using wind air turbines as the sole means of charging the batteries powering the electric motor-driven propulsion unit in a hybrid electric/hydrocarbon powered aircraft.

24 So is the invention claimed capable of industrial application and is it sufficiently described to allow the skilled person to perform it? The gist of the examiner's objection to lack of industrial application is that the inherent inefficiencies in the proposed system would make it impossible to work in a practical sense. He provides a number of justifications for this position.

25 The first seems to be based on an interpretation of the claim that involves the electric motor causing rotation of the same engine used to provide hydrocarbon fuel-based propulsion. I do not interpret the claim as necessarily requiring the same prime mover to be rotated in both modes. Equally that is not ruled out either and indeed whilst not specifically disclosed it seems to me that the propeller of a turboprop engine (where propulsion is provided by a propeller driven by a gas turbine engine) could also be driven by an electric motor and that would constitute the hybrid power source required in the claim. Alternatively I see no reason why the hydrocarbon fuelled engine and electric motor cannot be separate entities in a hybrid aircraft.

26 Second, the examiner suggests that the inherent inefficiency of a hybrid propulsion system means the invention simply would not work. He suggests that electric motors would not be able to provide sufficient thrust to lift the aircraft during take-off. Whilst that may again be correct, there is nothing in the specification to suggest that the electric motors have to be capable of powering the aircraft during take-off – indeed the description teaches that the batteries will have needed to have been charged during a period of hydrocarbon fuelled propulsion before the aircraft is switched to electric powered propulsion.

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[3] See URL: http://aviationweek.typepad.com/files/boeing_sugar_phase_i_final_review_v5.pdf, dated April 2010 as an example.

[4] See URL: http://aeroprojects.colorado.edu/archive/09_10/Documents/AIAA/AIAA_HELIOS.pdf, dated Spring 2010. Also see WO 2011/127389, published 13 Oct 2011, after the earliest date of the present application.

27 I confess that I find it difficult to understand everything that is said of the invention in the description. Indeed the suggestion on page 3 that the batteries can be charged in both hydrocarbon fuel and electric motor powered flight reads like a suggestion that this in one mode this is a perpetual motion machine and will need to be amended. But that aside I am satisfied that whilst it may indeed be the case that no hybrid aircraft is currently being manufactured, it is certainly not impossible for one to be manufactured including using a wind air turbine to charge the batteries that power the electric motor (in the way that say an invention that is contrary to accepted laws of physics would be). That such an aircraft might be very inefficient and that the range for the battery powered mode might be very short is of no bearing.

28 In this instance whether the specification is sufficient is the other side of the "industrial applicability" coin: in my opinion there is sufficient information contained in the specification for the skilled person to be able to put the invention into practice. In particular the skilled person would understand what a hybrid hydrocarbon fuel and electric motor driven aircraft involved and the specification teaches how the wind air turbine could be constructed.

Conclusion

29 Subject to the deletion of the phrase on page 3 that hints towards a perpetual motion machine I am satisfied that the requirements of sections 1(1)(c) and 14(3) are met. I therefore remit the application back to the examiner to complete the examination process.

Other issues

30 That further examination will inevitably also require consideration of the other issues that were raised by the examiner in his report of 14 May 2013 and which I have not addressed – in particular whether the invention claimed is novel and inventive, the added matter objection raised against claim 10 and the clarity of the claims. As regards novelty and inventive step in addition to the documents cited by the examiner (and of which WO 2010/020199, EP2369175, CN101607600 & DE 20201110475U look particularly relevant), consideration should also be given to an article[5] which came to my attention during my consideration of this application. That it is light hearted in nature does not affect its potential relevance as prior art against the presently claimed invention.

Appeal

31 Any appeal must be lodged within 28 days

A Bartlett

Deputy Director acting for the Comptroller.

[5] http://cleantechnica.com/2008/04/01/cleantech-breakthrough-wind-powered-airplanes/