

Commissioner's Decision # 1376

Décision du Commissaire # 1376

TOPIC: B00, F00, O00

SUJET: B00, F00, O00

Application No. : 2,619,449

Demande N^o : 2,619,449

IN THE CANADIAN PATENT OFFICE

DECISION OF THE COMMISSIONER OF PATENTS

Patent application number 2,619,449, having been rejected under subsection 30(3) of the *Patent Rules*, has subsequently been reviewed in accordance with paragraph 30(6)(c) of the *Patent Rules* by the Patent Appeal Board and by the Commissioner of Patents. The recommendation of the Board and the decision of the Commissioner follow:

Applicant

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INTRODUCTION

[1] This matter concerns a review of patent application no. 2,619,449 [“the ‘449 application”], entitled “Environmentally Harmonious Generation of Electricity”. The inventor, Mr. Ronald W. Cook, is a self-represented applicant.

[2] For the reasons that follow, we recommend that the application be refused.

BACKGROUND OF THE INVENTION

[3] The ‘449 application relates to a process for generating electricity using wind, water and solar inputs, and the use of electricity so generated to power vehicles and to generate power in power plants.

PROSECUTION HISTORY

[4] The ‘449 application was filed February 4, 2008.

[5] On October 26, 2012 the Examiner wrote a Final Action pursuant to subsection 30(4) of the *Patent Rules*. The Final Action stated that claim 1, the only claim on file in the application, was defective on the following grounds:

- failing to comply with subsection 27(4) of the *Patent Act* for being indefinite;
- failing to comply with paragraph 28.2(1)(b) of the *Patent Act* for comprising subject matter that was anticipated; and
- failing to comply with section 28.3 of the *Patent Act* for comprising subject matter that was obvious.

[6] In a response to the Final Action, dated December 7, 2012, the Applicant presented

arguments in favour of the novelty, non-obviousness and clarity of the claim.

[7] As the Examiner still considered the claim not to comply with *Patent Act*, pursuant to subsection 30(6) of the *Patent Rules* the application was forwarded to the Patent Appeal Board [“the Board”] for review on July 29, 2013, along with a Summary of Reasons explaining why claim 1 was considered not to comply with subsection 27(4), paragraph 28.2(1)(b) and section 28.3 of the *Patent Act*.

[8] In a letter from the Board dated November 8, 2013, the Applicant was forwarded a copy of the Summary of Reasons and was provided an opportunity for a hearing. In a response dated February 4, 2014, the Applicant declined a hearing and stated that he would like the review to proceed on the basis of the written record.

[9] After a preliminary review, this panel of the Board sent a letter dated March 31, 2014 to the Applicant, making preliminary observations on the defects relating to subsection 27(4), paragraph 28.2(1)(b), and section 28.3 of the *Patent Act* and providing the Applicant an opportunity to make submissions regarding the observations. Copies of the prior art references cited in the Final Action were attached to the letter. In a response dated May 1, 2014, the Applicant presented arguments concerning the preliminary observations.

ISSUES

[10] The issues for determination are those set out in the Final Action, the Summary of Reasons and the Board’s letter dated March 31, 2014, namely, whether the claim on file:

- fails to comply with subsection 27(4) of the *Patent Act* for being indefinite;
- fails to comply with paragraph 28.2(1)(b) of the *Patent Act* for comprising subject matter that was anticipated; and
- fails to comply with section 28.3 of the *Patent Act* for comprising subject matter

that was obvious on the claim date to a person skilled in the art.

THE SPECIFICATION ON FILE

[11] As the description is not very long, we will present it in its entirety:

Specification

[001] The general character of the kind of process relates to the generation of electricity in a power plant, and the generation of electricity as a motive power for vehicles for land and/or rail and/or water.

[002] The problem with current electrical power generation is the pollution as a result, as well as globalwarming. Nuclear power generates radioactive waste for which a satisfactory solution (permanent) has yet to be found, as well as the possibility of a meltdown, or terrorist activity causing the release of massive killing radioactivity. Combustion to produce electricity releases heat & pollutants to the atmosphere, neither of which is good for human beings.

[003] The Environmentally Harmonious Generation of Electricity process has no nuclear radioactivity, releases nothing to the environment, since hot water (which can kill vegetation, & insects) can, in the case of a power plant, be pumped back into the boiler to be turned into steam, and in the case of vehicle propulsion, can be pumped back into the water tank for conversion into hydrogen, and to help keep the water from freezing. Electricity from wind and/or solar can be used to keep the water tank from freezing. In addition, with the power source being hydrogen, no batteries required for transportation vehicles.

[004] The best way to put into practice the process for power generation plants would be: wind turbines & solar panels would produce electricity which would be applied to water, either piped in, or stored in a tank, thus creating hydrogen which would be stored in tanks (below or above ground) of sufficient capacity to compensate for periods of lack wind and/or solar input. The hydrogen would be sent to the fuel cell where the electricity generated would be applied to a heating element under the boiler to produce steam which would flow to an appropriate turbine, producing electricity for a grid. Hot water from the fuel cell would be pumped back into the boiler.

[005] The best way to put into practice the process for vehicle motive power would be: in the case of cars, trucks, land vehicles (other than rail), the roof would be topped by solar panels over top of a screened deck which allows wind from any direction to enter where it would turn vanes, turning an axle to produce electricity in connection with a dynamo. The electricity from here would be applied, first if necessary to keep water in a tank from freezing, and/or to the water to produce hydrogen which would be stored in a tank of sufficient capacity. The hydrogen would then be supplied to a fuel cell producing electricity to an electrical motor(s) to drive the wheel(s) through an appropriate connection.

[006] In the case of locomotives for railroads, once again solar panels on top of engine, with air inlets as described above for other land vehicles, producing hydrogen from water kept in tank which could then be supplied to a fuel cell, producing electricity to produce steam to drive pistons to drive wheel(s). Alternatively, the electricity from the fuel cell could be supplied to electric motor(s) to provide motive power with an appropriate connection to the wheel(s).

[007] In the case of water transportation, a wind turbine above deck would supply electricity to water in a tank to produce hydrogen which is supplied to a fuel cell which then supplies electricity to electric motor(s) to turn shaft to screw. Solar panels could be place on upper areas of the vessel for additional electricity. Hydrogen tank(s) would have to be of sufficient capacity.

[12] Para [004] describes a process for generating electricity for power generation plants. Paras [005]-[007] describe how the process is adapted to power vehicles for roads, locomotives for railroads, and vehicles for water, respectively.

[13] The description is followed by a single claim, directed to a process. The claim reads as follows:

A process for generating electricity which is in harmony with the environment by using wind, water, and solar inputs, without any pollution, by specifying how the electricity from the fuel cell is to be applied to generate power in the case of a power plant(s), and to the movement of vehicle(s), locomotive(s), and ship(s).

Purposive construction

[14] Purposive construction is an interpretive exercise in determining the meaning and scope of the claims. Claims construction is antecedent to consideration of validity: *Whirlpool Corp v Camco Inc*, 2000 SCC 67 at para 43 [“*Whirlpool*”]. Purposive construction requires that the claims be interpreted from the point of view of the person skilled in the art, who possesses the common general knowledge of the particular art: *Whirlpool* at para 53. Construction is based on the patent specification itself without resort to extrinsic evidence: *Free World Trust v Électro Santé Inc*, 2000 SCC 66, at para 66 [“*Free World Trust*”]. Further, recourse should be had to the description to gain insight into what was meant by a particular word or phrase. Otherwise the scope of the claim or claims as written can be neither restricted nor enlarged: *Purdue Pharma v Pharmascience Inc*, 2009 FC 726, at para 13. During purposive construction, the elements of the claimed invention are identified as essential or non-essential: *Free World Trust* at para 31. An element is considered non-essential if, based on a purposive construction, the skilled addressee would appreciate an element of the claim could be omitted or substituted without having a material effect on the working of the invention: *Free World Trust* at para 55). According to the Examination Practice Respecting Purposive Construction - PN2013-02, the essential elements of a claim are those elements that contribute to the proposed solution to the problem identified in the application.

[15] Since claims must be considered from the point of view of the skilled person in view of their common general knowledge, it is first necessary to identify such a person and such knowledge.

The person skilled in the art

[16] This panel’s letter dated March 31, 2014 quoted the Final Action in stating that:

. . . the field of invention for the present invention is the field of power generation and distribution. A person skilled in the art would be a technician in the same field of power generation and distribution.

[17] In the response dated May 1, 2014, the Applicant did not take issue with this characterization.

[18] We consider that this characterization of the skilled person is appropriate, and we adopt it for purposes of our analysis.

The common general knowledge of the skilled person

[19] This panel's letter dated March 31, 2014 provided its initial view that the relevant common general knowledge would include:

- using photovoltaic cells [solar inputs], windmills [wind inputs] and hydrogenerators [water inputs] as a source of electricity
- energy storage methods such as pumped water, batteries, and stored hydrogen produced through electrolysis
- energy production systems such as fuel cells and internal combustion engines using hydrogen as a fuel source
- using steam generators to generate electricity by means of a turbine/generator set
- using electric energy (by means of electric motors) as a power source for vehicles
- generating steam (by means of a heat source) to provide a motive force for steam locomotives

[20] In the response dated May 1, 2014, the Applicant did not take issue with this view.

[21] We consider this characterization of the common general knowledge at the filing date of the application to be appropriate, and we adopt it for purposes of our analysis.

The problem and solution

[22] The description [at para [002]] describes problems associated with some prior electricity generation processes. The description states:

The problem with current electrical power generation is the pollution as a result, as well as globalwarming. Nuclear power generates radioactive waste for which a satisfactory solution (permanent) has yet to be found, as well as the possibility of a meltdown, or terrorist activity causing the release of massive killing radioactivity. Combustion to produce electricity releases heat & pollutants to the atmosphere, neither of which is good for human beings

[23] Paras [003]-[007] of the description generally describe the Applicant's proposed solution to these problems, namely a process for generating power for use in power generation plants and the movement of vehicles, locomotives and ships that avoids the problems of generating radioactive waste (associated with nuclear power plants) and releasing heat and pollutants to the atmosphere (associated with combustion).

[24] Next we construe the claim.

The essential elements of the claimed invention

"A process for generating electricity... by using wind, water, and solar inputs"

[25] Claim 1 begins with the phrase "[a] process for generating electricity." The process comprises the active steps of "using wind, water, and solar inputs". The skilled person would understand that the conjunction "and" restricts the process to a process using all three inputs. Having both wind and solar inputs provides a redundancy for situations when one source or the other is unavailable, and thus they are essential elements of the claim. "Water... inputs" will be discussed later in this analysis. We first consider the meaning of "wind... inputs" and "solar... inputs".

- [26] Regarding “wind... inputs”, according to the description, the best way to put into practice the process for power generation plants would include using “wind turbines” (para [004]), and the best way to put into practice the process for vehicle motive power would include installing on the roof of the vehicle a “screened deck which allows wind from any direction to enter where it would turn vanes, turning an axle to produce electricity in connection with a dynamo” (para [0005]). This description of wind turbines, and of vanes connected to an axle that in turn is connected to a dynamo, is consistent with the meaning that the expression “wind... inputs” in its ordinary sense conveys to the skilled person.
- [27] As for “solar... inputs”, according to the description, the best way to put into practice the process for power generation plants would include using “solar panels” (para [004]), and the best way to put into practice the process for vehicle motive power would include installing “solar panels” on the roof of cars, trucks and land vehicles (para 005), on top of the engine of locomotives (para [006]), and on upper areas of water vessels (para [007]). This description of “solar panels” is consistent with the meaning that the expression “solar... inputs” in its ordinary sense conveys to the skilled person.

“which is in harmony with the environment... without any pollution”

- [28] The expressions “which is in harmony with the environment” and “without any pollution” would be viewed by the skilled person as reflecting the implicit result of a process that, as set forth earlier in the claim, uses wind, water, and solar inputs. The description [at paras [002]-[003], describes the process of generating electricity from wind and solar inputs as the “Environmentally Harmonious Generation of Electricity process.” The description further contrasts this process with prior known processes derived from sources such as nuclear power and combustion of carbon-based fuels, which are described as producing pollution, radioactive waste and/or the release of heat into the atmosphere. The skilled person would thus understand the expressions “which is in

harmony with the environment” and “without any pollution” to be implicit in the features of the claim previously construed.

“by specifying how the electricity from the fuel cell is to be applied”

[29] We turn to the phrase “by specifying how the electricity from the fuel cell is to be applied” and, more particularly, the term “specifying”. While the description (paras [004]-[007]) does describe how the electricity from the fuel cell would be applied to generate power in a power plant and to the movement of vehicles, the principles of claim construction do not allow one to “[u]se stray phrases in the body of the Specification for the purpose of narrowing or widening the boundaries of the monopoly fixed by the plain words of a claim”: *Procter & Gamble Co v Calgon Interamerican Corp* (1982), 61 CPR (2d) 1 (FCA) at p 9. It would therefore be impermissible to read these portions of the description into the claims, as recourse to the description is permissible only to assist in understanding terms that appear in the claims.

“to generate power in the case of a power plant(s), and to the movement of vehicle(s), locomotive(s), and ship(s)”

[30] The claim concludes with the phrase “to generate power in the case of a power plant(s), and to the movement of vehicle(s), locomotive(s), and ship(s).” The skilled person would not understand from the claim language whether it claims two separate embodiments: the generation of power in a power plant; and the powering of vehicles, locomotives and ships. Since the description does not describe these embodiments in combination, the skilled person would understand the claim to present these embodiments as distinct alternatives.

[31] With respect to the particular embodiment of powering various types of vehicles, the phrase “and to the movement of vehicle(s), locomotive(s), and ship(s)” would be

understood by the skilled person as referring to sub-embodiments, namely the cases of land vehicles, locomotives and water vessels, in which electricity from a fuel cell is applied to move such transportation forms. This is consistent with the description [paras [004]-[007], which describes embodiments of power plants, vehicles, locomotives and ships separately, not in any combination with one another. Therefore, the skilled person would understand the claim to present the sub-embodiments of vehicles, locomotives and ships as distinct alternatives.

[32] The final expression to be construed is “water... inputs.” The person skilled in the art would understand this expression, in its ordinary sense, to refer to hydroelectric power. This power source, like wind vanes and solar panels, is a renewable energy resource. However, the description does not in any way suggest such a meaning.

[33] The description does provide two embodiments in which water is used, but neither embodiment would be understood by the skilled person as describing an energy “input.”

[34] Regarding the first embodiment, relating to power generating plants, the description [at para [004]] describes water being used in the following way:

wind turbines & solar panels would produce electricity which would be applied to water, either piped in, or stored in a tank, thus creating hydrogen which would be stored in tanks (below or above ground) of sufficient capacity to compensate for periods of lack wind and/or solar input. The hydrogen would be sent to the fuel cell where the electricity generated would be applied to a heating element under the boiler to produce steam which would flow to an appropriate turbine, producing electricity for a grid. Hot water from the fuel cell would be pumped back into the boiler.

[35] As for the second embodiment, relating to powering vehicles, the description [at paras [005]-[007]] describes water being used as follows: electricity from wind vanes and solar panels is applied to water in order to create hydrogen; the hydrogen is subsequently supplied to a fuel cell; the fuel cell then produces electricity to an electrical motor; and

the electric motor provides motor power with an appropriate connection to the wheels of a land vehicle or locomotive, or to the propeller shaft of water transportation.

Alternatively, in the case of a locomotive, the description states that electricity from the fuel cell is used to produce steam to drive pistons to drive the wheels.

- [36] For the reasons that follow, the skilled person would consider the expression “water...inputs” to be insufficiently distinct and explicit and therefore non-compliant with subsection 27(4) of the *Patent Act*.

IS THE CLAIM COMPLIANT WITH SS. 27(4) OF THE *PATENT ACT*?

- [37] This brings us to a consideration of the defect, stated in the Final Action, the Summary of Reasons and the Board’s letter dated March 31, 2014, that claim 1 does not comply with subsection 27(4) of the *Patent Act*, which states:

The specification must end with a claim or claims defining distinctly and in explicit terms the subject-matter of the invention for which an exclusive privilege or property is claimed. [emphasis added]

- [38] In *Minerals Separation North American Corp v Noranda Mines Ltd*, [1947] Ex CR 306, 12 CPR 99 at p 146 [*“Minerals Separation”*], the Court emphasized that an applicant has to make clear in his claims the ambit of the monopoly sought and that the terms used in the claims must be clear and precise:

By his claims the inventor puts fences around the fields of his monopoly and warns the public against trespassing on his property. His fences must be clearly placed in order to give the necessary warning and he must not fence in any property that is not his own. The terms of a claim must be free from avoidable ambiguity or obscurity and must not be flexible; they must be clear and precise so that the public will be able to know not only where it must not trespass but also where it may safely go. [emphasis added]

[39] The *Minerals Separation* case ultimately reached the Judicial Committee of the Privy Council, (1952), 15 CPR 133, for determination. The Board of the Judicial Committee's reasons for judgment expounded further on the law regarding ambiguity, at p 142:

The law as to ambiguity is clear and their Lordships need only refer to a well known passage in the speech of Lord Loreburn in *Natural Colour Kinematograph Co Ltd v Bioschemes Ltd* (1915), 32 RPC 256 where he says

It is the duty of a patentee to state clearly and distinctly, either in direct words or by clear and distinct reference, the nature and limits of what he claims. If he uses language which, when fairly read, is avoidably obscure or ambiguous, the Patent is invalid, whether the defect be due to design, or to carelessness or to want of skill. Where the invention is difficult to explain, due allowance will, of course, be made for any resulting difficulty in the language. But nothing can excuse the use of ambiguous language when simple language can easily be employed, and the only safe way is for the patentee to do his best to be clear and intelligible. [emphasis added]

[40] The question for determination is whether the expression “water...inputs” defines the subject-matter of the invention distinctly and in explicit terms, as required by subsection 27(4) of the *Patent Act*.

[41] As we stated in para [32], the expression “water... inputs” in its ordinary sense conveys to the skilled person the meaning of energy derived from hydroelectric power. However, the skilled person would discover that nowhere in the description is this meaning to be found. He would read the description to see whether it provides a definition for this term, and would discover that it does not. The skilled person would find references to water in the description, but not to water inputs. He would understand that the manner in which water is used in the processes set out in the description does not describe an “input” in the way that the energy of the sun and the wind represent inputs into the process. The skilled person, in reading the description, would wonder whether the reference to water in the claim was intended to refer to: (a) the water that is described as being stored in tanks,

converted to hydrogen using electricity from the solar and wind inputs, and then sent to a fuel cell; or (b) the water that is described as being contained in a boiler to produce steam using electricity from the fuel cell. He would be unsure of what meaning to attribute to the expression “water...inputs.”

[42] As a result, the skilled person would conclude that the expression “water... inputs” is not distinct and explicit, but is rather avoidably obscure or ambiguous in a situation where the invention is not difficult to explain and simple language could easily have been employed. Therefore, claim 1 does not comply with subsection 27(4) of the *Patent Act*.

[43] Having reached a determination on this issue, we are not in a position to make proper determinations with respect to the issues of novelty and obviousness on the basis of this claim. Therefore, we could conclude our review on the basis that the only claim on file does not comply with subsection 27(4) of the *Patent Act*.

[44] However, it is at least arguable that the Applicant, an unrepresented inventor, had intended to claim the embodiments set out in para [41] above. It is also possible that had the Applicant been represented by a qualified patent agent the claim might have been amended in order to overcome the subsection 27(4) defect.

[45] In this case, although not obliged to do so, we will consider the remaining issues of novelty and obviousness by considering the claim as if it had been amended to claim the above-mentioned described embodiments. Such a claim would cover two embodiments. The first embodiment would relate to power generation plants, and comprise a process having the steps of: generating electricity from wind vanes and solar panels; using this electricity to produce hydrogen through the electrolysis of water to facilitate power storage; and later using the electricity to power a heating element under a power plant’s boiler to produce steam, which would flow to a turbine, generating power. The process would further include using hot water from the fuel cell to supply the boiler, to be turned

into further steam for driving the turbine. The second embodiment would relate to powering vehicles, and comprise a process having the steps of: generating electricity from wind vanes and solar panels located on the vehicles; using this electricity to produce hydrogen through the electrolysis of water to facilitate power storage; and later using the electricity to power land vehicles, railway locomotives and water vessels.

NOVELTY

Legal principles

[46] The statutory provision relevant for assessing novelty is subsection 28.2(1) of the *Patent Act*. This subsection provides, in part:

The subject-matter defined by a claim in an application for a patent in Canada (the “pending application”) must not have been disclosed

- (a) more than one year before the filing date by the applicant, or by a person who obtained knowledge, directly or indirectly, from the applicant, in such a manner that the subject-matter became available to the public in Canada or elsewhere;
- (b) before the claim date by a person not mentioned in paragraph (a) in such a manner that the subject-matter became available to the public in Canada or elsewhere.

[47] In *Apotex Inc v Sanofi-Synthelabo Canada Inc*, 2008 SCC 61, the Supreme Court of Canada reviewed the principles of novelty. The Court held that two separate requirements must be established in order for there to be lack of novelty, or anticipation: disclosure and enablement. That is, an allegedly anticipating disclosure must not only describe the features of the claimed invention, it must also enable the skilled person to practice the claimed invention.

Analysis

[48] In the Final Action and Summary of Reasons, the following references were cited by the Examiner as forming part of the state of the art:

Patent

D1: US 7, 248,018 B2

issued 24 July, 2007

Sanders

Other document

D2: "Grid energy storage"

retrieved 02 Feb, 2008

Wikipedia entry

http://en.wikipedia.org/w/index.php?title=Grid_energy_storage&oldid=188650875

[49] D1 discloses a refueling station wherein electricity from solar photovoltaic arrays, a windmill, a hydrogenerator and/or a biothermal system is used to generate hydrogen through electrolysis of water, and the hydrogen is used by the refueling station to refuel a hydrogen fuel cell vehicle, the vehicle being a cart, car or hovercraft.

[50] D2 discloses a system using electricity obtained from solar and wind inputs to generate hydrogen through electrolysis of water, the hydrogen acting as energy storage. D2 further discloses that hydrogen may be used in conventional internal combustion engines used in cars and other means of transport, or in fuel cells, from which energy is subsequently fed into an electricity grid.

[51] We will consider a hypothetical claim encompassing the two alternative embodiments described at para [45] relating to power generation plants and powering vehicles. If either of the two embodiments is taught by either D1 or D2, the claim would be anticipated.

D1 compared to claim

The embodiment relating to power generation plants

- [52] With respect to the embodiment relating to generating electricity for power generation plants, this is not taught by D1, as the claim includes the following steps, which are not disclosed by D1: applying the electricity from the fuel cell to a heating element under the boiler of a power plant, thereby producing steam, which then flows to an appropriate turbine, producing electricity for a grid, and using hot water from the fuel cell to supply the boiler, to be turned into further steam for driving the turbine.

The embodiment relating to powering vehicles

- [53] As for the alternative embodiment relating to powering vehicles, D1 discloses and enables a process comprising generating electricity from wind vanes and solar panels, using this electricity to produce hydrogen through the electrolysis of water to facilitate power storage, and later using the electricity to power carts, cars and hovercraft. However, D1 does not teach the feature of the vehicle itself carrying the power generating system (in D1 the refueling station is separate from the vehicle)
- [54] Since neither of the two alternative embodiments is taught by D1, it follows that if the claim had been amended to overcome the subsection 27(4) defect, it would not have been anticipated by D1.

D2 compared to claim

The embodiment relating to power generation plants

[55] Regarding the embodiment relating to generating electricity for power generation plants, this is not taught by D2, as the proposed claim would include the steps of applying the electricity from the fuel cell to a heating element under the boiler of a power plant, thereby producing steam, which then flows to an appropriate turbine, producing electricity for a grid, whereas D2 does not include these steps, the electricity from the fuel cell being fed directly into the electricity grid. The proposed claim would also include the steps of using hot water from the fuel cell to supply the boiler in the power plant, to be turned into further steam for driving the turbine, whereas D2 does not include these steps.

The embodiment relating to powering vehicles

[56] As for the alternative embodiment relating to powering vehicles, D2 discloses and enables a process comprising generating electricity from wind vanes and solar panels, using this electricity to produce hydrogen through the electrolysis of water to facilitate power storage, and later using the hydrogen in conventional internal combustion engines used in cars and other means of transport. However, D2 does not teach the feature of the vehicle itself carrying the power generating system.

[57] Since neither of the two alternative embodiments is taught by D2, it follows that if the claim had been amended to overcome the subsection 27(4) defect, it would not have been anticipated by D2.

OBVIOUSNESS

Legal principles

[58] Section 28.3 of the *Patent Act* sets out the information to be considered in determining whether the subject matter of a claim is obvious:

28.3 The subject-matter defined by a claim in an application for a patent in Canada must be subject-matter that would not have been obvious on the claim date to a person skilled in the art or science to which it pertains, having regard to

(a) information disclosed more than one year before the filing date by the applicant, or by a person who obtained knowledge, directly or indirectly, from the applicant in such a manner that the information became available to the public in Canada or elsewhere; and

(b) information disclosed before the claim date by a person not mentioned in paragraph (a) in such a manner that the information became available to the public in Canada or elsewhere.

[59] In *Sanofi, supra*, the Supreme Court of Canada stated that it is useful in an obviousness inquiry to follow the following four-step approach:

- (1)
 - (a) Identify the notional "person skilled in the art";
 - (b) Identify the relevant common general knowledge of that person;
- (2) Identify the inventive concept of the claim in question or if that cannot readily be done, construe it;
- (3) Identify what, if any, differences exist between the matter cited as forming part of the "state of the art" and the inventive concept of the claim or the claim as construed;
- (4) Viewed without any knowledge of the alleged invention as claimed, do those differences constitute steps which would have been obvious to the person skilled in the art or do they require any degree of invention?

Analysis

(1)(a) The person skilled in the art

[60] As stated previously at para [16], the person skilled in the art is a technician in the field

of power generation and distribution.

(1)(b) The relevant common general knowledge

[61] The relevant common general knowledge of the skilled person is as stated previously at para [19].

(2) The inventive concept of the claim

The embodiment relating to power generation plants

[62] The inventive concept of this embodiment is a process comprising the steps of producing electricity from wind vanes and solar panels, using this electricity to produce hydrogen through electrolysis, storing the hydrogen in a tank, sending the hydrogen to a fuel cell, producing electricity that is applied to a heating element under the boiler of a power generating plant to produce steam, which would flow to a turbine, producing electricity for a grid. Hot water from the fuel cell would be pumped back into the boiler.

The embodiment relating to powering vehicles

[63] The inventive concept of this embodiment is a process comprising the steps of producing electricity from wind vanes and solar panels attached to a vehicle, using this electricity to produce hydrogen through electrolysis, storing the hydrogen in a tank, sending the hydrogen to a fuel cell, producing electricity used to power an electrical motor to drive the wheels or other propulsion device of the vehicle through an appropriate connection.

(3) Differences between the state of the art and the inventive concept...

[64] D2 can be used to establish the relevant state of the art, as D1 adds nothing beyond that

which is disclosed by D2.

... for the embodiment relating to power generation plants

[65] As discussed at para [55] under the novelty assessment, the difference between D2 and the inventive concept for this embodiment is that the inventive concept would include: the additional loop of applying the electricity from the fuel cell to a heating element under the boiler of a power plant, thereby producing steam, which then flows to an appropriate turbine, producing electricity for a grid, whereas the state of the art does not include this additional loop, the electricity from the fuel cell being fed directly into the electricity grid; and the loop of using hot water from the fuel cell to supply the boiler in the power plant, to be turned into further steam for driving the turbine.

... for the embodiment relating to powering vehicles

[66] As discussed at para [56] under the novelty assessment, the difference between D2 and the inventive concept for this embodiment is that the inventive concept would include the feature of the vehicle itself carrying the power generating system.

(4) Do the differences constitute steps that would have been obvious?

... for the embodiment relating to power generation plants

[67] The differences set out in para [65] would not have constituted a step that required inventive ingenuity. The step of adding an additional loop of applying the electricity from the fuel cell to a heating element under the boiler of a power plant, thereby producing steam, which then flows to an appropriate turbine, producing electricity for a grid, does not represent an inventive step over state of the art systems in which the electricity from the fuel cell is fed directly to the grid. The skilled person, possessing the common

knowledge of the use of steam generators to generate electricity by means of a turbine/generator set, would recognize the additional loop as one of a finite number of obvious, albeit less efficient, alternative to a system without the loop, as such a loop would naturally increase energy losses. Accordingly, adopting such an embodiment cannot be considered an inventive step.

[68] The step of adding a loop of using hot water from the fuel cell to supply the boiler in the power plant, to be turned into further steam for driving the turbine would have been obvious to the person skilled in the art. Using hot water, when available, to supply a boiler in order to gain efficiencies in generating steam is within the expected competence of the skilled person, possessing knowledge of steam generators.

... for the embodiment relating to powering vehicles

[69] The difference set out in para [66] would not have constituted a step that required inventive ingenuity. Providing a process in which the vehicle itself supports the power generating system instead of having a power generating system separate from the vehicle would be an alternative readily recognized by the skilled person. An alternative involving vanes attached to a vehicle would not be very practical, as the additional weight and drag added to the vehicle would require additional energy from the supply system. This would explain why one does not see them on vehicles today, although experimental vehicles fitted with solar panels to produce electricity to drive the wheels have been around for some time. In any case, we do not consider that adopting such an embodiment can be considered as an inventive step.

[70] For the foregoing reasons, even if the claim had been amended to overcome the subsection 27(4) defect, it would have been obvious to the person skilled in the art on the claim date and thus would not comply with section 28.3 of the *Patent Act*.

CONCLUSION

[71] We have found that the claim on file does not comply with subsection 27(4) of the *Patent Act*. While we consider that a claim could have been proposed that would have overcome this defect (as well as the defect under paragraph 28.2(1)(b) of the *Patent Act*), such an amendment would not have changed the outcome in this case. As we have concluded, such a claim would not have complied with section 28.3 of the *Patent Act*. Accordingly, there is no point in requiring the Applicant to amend the claim under paragraph 31(c) of the *Patent Rules*.

RECOMMENDATION OF THE PANEL

[72] In view of the above, we recommend that the application be refused because the only claim on file does not comply with subsection 27(4) of the *Patent Act* and a proposed amendment would not render the application compliant with the *Patent Act*.

Paul Fitzner
Member

Ed MacLaurin
Member

Stephen MacNeil
Member

DECISION OF THE COMMISSIONER

[73] I concur with the Patent Appeal Board's findings and its recommendation that the application be refused because the only claim on file does not comply with subsection 27(4) of the *Patent Act* and a proposed amendment would not render the application compliant with the *Patent Act*.

[74] Accordingly, I refuse to grant a patent on this application. Under section 41 of the *Patent Act*, the Applicant has six months within which to appeal my decision to the Federal Court of Canada.

Sylvain Laporte
Commissioner of Patents

Dated at Gatineau, Quebec,
this 11th day of February, 2015