

**OPINION UNDER SECTION 74A**

Patent	GB 2481806 B
Proprietor(s)	Flytrap Designs Ltd
Exclusive Licensee	
Requester	Flytrap Designs Ltd
Observer(s)	BMW AG and BMW UK
Date Opinion issued	21 December 2017

**The request**

1. The comptroller has been requested by Flytrap Designs Ltd. (“the Requester”) to issue an opinion as to whether their patent GB 2481806 B (“the Patent”) is infringed by the BMW i3 type vehicle produced by BMW (“the Observer”). In particular, the requester has argued that the BMW i3 falls within the definition of claim 1 of the Patent.
2. The request was received on the 26 September 2017 and includes references to websites relating to the BMW i3, and records of communications between the inventor and BMW. These communications, which relate to the requester asking the observer if they would be interested in utilising his invention, are not considered to be relevant to the issue of infringement.

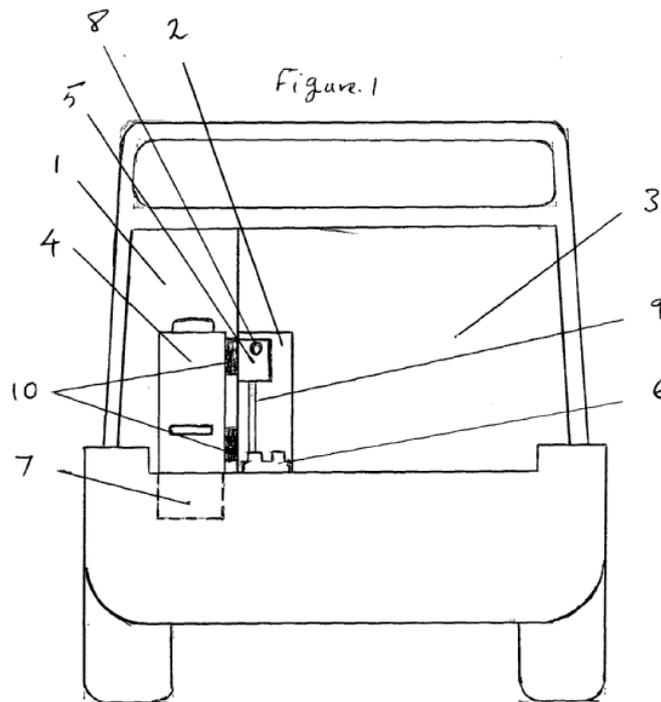
**Observations and observations in reply**

3. Observations were received from BMW AG and BMW UK, referred to collectively as “BMW”, on the 26 October 2017. The observations refute that there is any infringement of the Patent.
4. Observations in reply were submitted by the requester on the 8 November 2017.

**The Patent**

5. The patent was filed on 5 July 2010. It was granted on 10 July 2013 and is still in force. It relates to a system that provides an electric vehicle with the option of having a means for on-board power generation. This allows the vehicle to be charged away from power points and the range of the vehicle to be extended, or air conditioning to be used, for example. The system comprises three components in the form of an electric generator, an engine and a fuel tank – where at least some of these components (as discussed below) are removable and hand portable. The vehicle also has means to locate these components.

6. Figure 1 of the Patent is reproduced below, in particular showing the vehicle boot space 3; an electrical generator 7; an engine 4; fuel tank 6; and mountings 10:

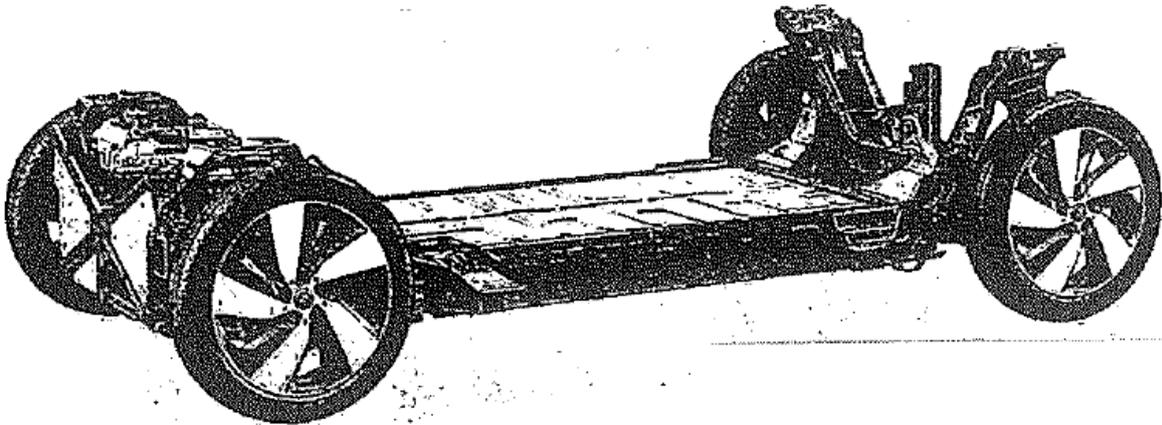


7. The Patent has 23 claims, with claim 1 being the only independent claim. Claim 1 of the Patent as granted, which for the purposes of this opinion I have broken down into integer parts (a-e), reads:
- (a) *A system in combination with a vehicle, wherein the vehicle is operable as a purely electric vehicle; and wherein*
  - (b) *the system comprises three components which are adapted to be linked to each other for providing on-board power generation for the vehicle,*
  - (c) *the components being an electrical generator, an engine and a fuel tank respectively,*
  - (d) *wherein at least one of the engine, electrical generator or combination of two of the three components is hand portable and removable, and wherein*
  - (e) *the vehicle comprises receiving location means for the removed component or components to be positioned in the vehicle.*

### **The BMW i3**

8. The BMW i3 is an electric vehicle produced by BMW, which is provided in two versions: the BMW i3 BEV and the BMW i3 REX. The BMW i3 BEV is a purely electric vehicle, whilst the BMW i3 REX is the electric vehicle further including a 'range extender'. This range extender comprises an engine and electric generator, incorporated in the vehicle's overall drive module, as well as a fuel tank. The drive module also includes the main electric traction motor (amongst other components).

9. The drive module of the BMW i3 is shown below (from the BMW UK website), with the electric motor, the transmission and the optional range extender in the rear.



### Arguments

10. The requester has argued that both the pure electric (BMW i3 BEV) and range extender (BMW i3 REX) versions of the i3 infringe the patent. In particular the requester considers both the BMW i3 BEV and the BMW i3 REX are fundamentally the same vehicle with the same vehicle layout – the difference being the presence or not of the components of the range extender – with the patent envisaging adapting the vehicle between a pure electric one (i.e. the i3 BEV) and one with a system for on-board power generation (i.e. the i3 REX).
11. The requester has stated that the range extender of the BMW i3 has a ‘small’ engine (based on a detuned scooter engine), a small nine litre fuel tank, and that the BMW i3 has been designed to accommodate the options (i.e. with and without the range extender on board) without significant modification to the vehicle. Thus the range extender or parts thereof are removable and hand portable.
12. The observer has denied that there is any infringement of the patent, arguing that neither the engine nor the electric generator, alone or in combination with each other and/or a fuel tank in the BMW i3 REX is removable or hand portable. Specifically as the range extender is incorporated in the drive module, in order to dismount the range extender a complex, time consuming and highly specialised process must be performed. Additionally the engine weighs nearly 43kg and the electrical generator weighs nearly 27kg – neither therefore being hand portable. Furthermore, the BMW i3 REX is not said to have receiving location means.
13. The observer has further argued that the BMW i3 BEV is a purely electric vehicle and does not comprise a generator or an engine. Thus it does not infringe the patent.

### Infringement

14. Section 60 of the Act states that:

*(1) Subject to the provisions of this section, a person infringes a patent for an invention if, but only if, while the patent is in force he does any of the following things in the United Kingdom in relation to the invention without the consent of the*

*proprietor of the patent, that is to say-*

*(a) Where the invention is a product, he makes, disposes of, offers to dispose of, uses or imports the product or keeps it whether for disposal or otherwise;*

*(b) Where the invention is a process, he uses the process or he offers it for use in the United Kingdom when he knows, or it is obvious to a reasonable person in the circumstances, that its use there without the consent of the proprietor would be an infringement of the patent;*

*(c) Where the invention is a process, he disposes of, offers to dispose of, uses or imports any product obtained directly by means of that process or keeps any such product whether for disposal or otherwise.*

*(2) Subject to the following provisions of this section, a person (other than the proprietor of the patent) also infringes a patent for an invention if, while the patent is in force and without the consent of the proprietor, he supplies or offers to supply in the United Kingdom a person other than a licensee or other person entitled to work the invention with any of the means, relating to an essential element of the invention, for putting the invention into effect when he knows, or it is obvious to a reasonable person in the circumstances, that those means are suitable for putting, and are intended to put, the invention into effect in the United Kingdom.*

15. The request has made no indication that indirect infringement under 60(2) is to be considered. Furthermore, the request appears to be limited to whether the sale of the BMW i3 infringes the patent under Section 60(1)(a).
16. In the Supreme Court in *Actavis UK Limited*<sup>1</sup> Lord Neuberger stated that the problem of infringement is best approached by addressing two issues, each of which is to be considered through the eyes of the notional addressee of the patent in suit, i.e. the person skilled in the relevant art. Those issues are:
  - (i) does the variant infringe any of the claims as a matter of normal interpretation; and, if not,*
  - (ii) does the variant nonetheless infringe because it varies from the invention in a way or ways which is or are immaterial?*
17. If the answer to either issue is “yes”, there is an infringement; otherwise, there is not.
18. I will therefore start by considering whether the BMW i3 BEV and BMW REX infringe the Patent as a matter of normal interpretation which means interpreting the claims of the patent in the light of the description and drawings. Simply put, I must decide what a person skilled in the art would have understood the patentee to have used the language of the claims to mean.
19. I consider the person skilled in the art to be an electric vehicle designer/technician.
20. I think there are a number of issues of interpretation in claim 1 which I shall consider in turn. Firstly, in part 1(a) of the claim (as identified above):

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<sup>1</sup>*Actavis UK Limited and others v Eli Lilly and Company* [2017] UKSC 48

*A system in combination with a vehicle, wherein the vehicle is operable as a purely electric vehicle; and wherein*

21. I believe that the person skilled in the art would take this as a claim to both the vehicle and the system (the system comprising the three components). This is readily apparent not only from part (a), but from parts (b) and (e) of the claim which refer to respective features of the system and vehicle. Thus the claim is not to the electric vehicle on its own, nor is it a claim to the system on its own.
22. Secondly, in part 1(d) of the claim (as identified above):

wherein at least one of the engine, electrical generator or combination of two of the three components is hand portable and removable, and wherein
23. The requester and observer have offered somewhat contrasting views on the interpretation of the terms 'hand portable' and 'removable'.
24. Considering 'removable' first, the requester has stated that the term relates to the ability to easily adapt the electric vehicle between a pure electric one and one with a system for on-board power generation. Put another way, it is not that the component(s) is merely capable of being removed, but rather that the electric vehicle should function whether or not it carries the system for on-board power generation. The requester has noted that claim 1 of the Patent does not specify who should be able to remove a component(s) or how frequently a component(s) is removed.
25. The observer has submitted that in order to be removable it should be "as simple as the operator removing the bolt and lifting the engine out of the engine compartment". The observer has also made a distinction between components which can be removed from the vehicle with minimal effort and time, and those which are "permanently" installed that require more specialist skills and time etc. to remove.
26. Looking at the description and drawings of the Patent I note that there is no explicit explanation of the component(s) being 'removable'. Nevertheless, the description states, for example:

"The engine and fuel tanks need only be carried when the anticipated journey is longer than the range possible from the vehicle's battery reserve or charging away from a power point is required. This is done simply by lifting the engine and dropping it into a mounting in the engine compartment at the back of the vehicle..." (page 2 lines 6-8)

"...the engine can be carried/employed when required to provide extra charge for the battery pack and give the driver peace of mind" (page 2 line 39 – page 3 line 1)

"If the engine needs servicing or repair or replacement, the owner may simply hand it in and immediately replace it with a courtesy engine or a new engine or their own spare engine or they can rely on the power point charging of the vehicle's battery pack alone". (page 3 lines 36-38)

"The engine compartment is lined with a material which is....hardwearing to withstand repeat engine installation." (page 5 lines 30-32).

“the angle of the V-shape (mountings) would be chosen to maximise ease of engine attachment/removal” (page 6 lines 8-9)

“This design would allow the vehicle to affix the engine and couple it to the electrical generator in one movement” (page 6 lines 33-34)

27. It is clear from the description and drawings that the installation of a component(s) is relatively simple and a component(s) is intended to be carried in the vehicle only when a journey requires it. I also note that there is clearly a distinction between a component being ‘removable’ as defined in claim 1 and a component being ‘permanently installed’ as defined in the dependent claims. Thus, construing the term ‘removable’ in light of the description and figures I believe that the person skilled in the art would take this to mean that the component(s) can be *readily* taken out of the vehicle – such that the component(s) is optional on a per journey basis.
28. Whilst I note that the description only refers to the installation of the engine component, I think that the person skilled in the art would construe that the other components, such as the electric generator, could similarly be *readily* taken out of the vehicle so that they are only carried on journeys/occasions when required.
29. Considering the term ‘hand portable’, both the requester and the observer have referred to page 7 lines 1-2 of the description, which states:

“With regard to the engine...the more powerful the better, but it must remain light enough to be hand portable, for example up to around five kilograms”
30. I think that the term ‘hand portable’ can be taken by the person skilled in the art to mean that a component(s) should be capable of being carried by hand, with the example in the description of “up to around five kilograms” serving as a guide.
31. Lastly, in in part 1(d) of the claim (as identified above):

the vehicle comprises receiving location means for the removed component or components to be positioned in the vehicle.
32. Again there is no specific mention in the description of ‘receiving location means’. The description refers to mountings, in particular V-shaped mountings. The requester has submitted that the claim is not limited to the mountings defined in the description, whereas the observer has defined the ‘receiving location means’ as allowing components to be located in the vehicle by hand, with minimal effort and time.
33. I do not think that the person skilled in the art would consider the ‘receiving location means’ to be limited to the mountings in the description – this feature simply requires the vehicle to have some means for receiving and positioning the component(s) in the vehicle.

### **Does the BMW i3 infringe claim 1 of the Patent?**

#### **BMW i3 BEV**

34. The BMW i3 BEV is an electric vehicle only. It does not have a system comprising

three components for providing on-board power generation for the vehicle. Therefore, as a matter of normal interpretation, it is my opinion that the BMW i3 BEV does not infringe claim 1 of the Patent.

### **BMW i3 REX**

35. The BMW i3 REX is an electric vehicle with a system, in the form of a range extender, which comprises an electric generator, an engine and a fuel tank which can be linked together to provide on-board power generation for the vehicle. The BMW i3 REX also has means to receive and position the components of the range extender in the vehicle. Thus the BMW REX has all the features of parts 1(a)-(c)&(e) of claim 1 of the patent.
36. Part (d) of claim 1 requires that, as a minimum, either the engine or the electric generator must be removable and hand portable as construed above. In other words either the engine or the electric generator must be able to be *readily* taken out of the BMW i3 REX – such that the engine or generator is optional on a per journey basis – and is capable of being carried by hand.
37. The requester has argued that, despite being at the more labour-intensive end of the spectrum – due to the requirement to remove the drive module in order to remove the components (i.e. the engine and the electric generator) of the range extender – the fact remains that the BMW i3 REX can be converted into a purely electric vehicle (i3 BEV) with the removal of the range extender components. Furthermore, the requester argues that the engine used in the BMW i3 REX range extender is small and based on a BMW scooter engine. They also note, based on an internet article<sup>2</sup>, that this engine has been detuned to produce around 35 bhp, down from around 60-65 bhp, and thus a smaller and lighter engine could have been used to have the same technical effect for the range extender.
38. The observer has argued that the process of removing the engine and/or electric generator is a complex and time consuming process, to be carried out by an engineer using specialist tools, and thus the relevant components are not ‘removable’ in the sense of how that term should be construed. They have also noted that the engine of the range extender is nearly 43kg and the electric generator is nearly 27kg – making neither of them hand portable.
39. It is my opinion that neither the engine nor the electric generator of the range extender are able to be *readily* taken out of the BMW i3 REX. It is clear that removing the engine/generator is a complex process which is not optional on a per journey basis. Indeed the range extender is, essentially, permanently installed. The fact that the range extender, or parts thereof, could be removed from the BMW i3 REX – after considerable time, effort and skill – and then function as an electric vehicle (i.e. a BMW i3 BEV), does not mean that the BMW i3 REX has *removable* components – as properly construed. Thus it is my opinion that the BMW i3 REX does not have an engine or electric generator which is removable and thus does not meet the requirements of part 1(d) of claim 1 of the Patent.
40. Furthermore, the engine of the range extender is nearly 43kg and the electric

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<sup>2</sup> <http://bmwi3.blogspot.co.uk/2014/10/the-i3-rex-one-owners-thoughts-on-bevx.html>

generator is nearly 27kg. I cannot see how either of these is capable of being carried by hand. Whilst I accept that the example in the description of “up to around five kilograms” is not limiting on claim 1, the engine in the ranger extender is around eight times this weight. The fact that a smaller/lighter engine (i.e. to produce 35 bhp) *could* be used in the range extender does not mean that the ranger extender *has* an engine which is capable of being carried by hand. Thus it is my opinion that the BMW i3 REX does not have an engine or electric generator which is hand portable and thus does not meet the requirements of part 1(d) of claim 1 of the Patent.

41. Consequently, as a matter of normal interpretation, it is my opinion that the BMW i3 REX does not infringe claim 1 of the Patent.

**Does the BMW i3 vary from the invention in a way(s) that is immaterial?**

42. The second issue to be addressed is asking whether the variant provided by the BMW i3 varies in a way(s) which is immaterial? If the answer to this is yes then the BMW i3 will infringe.

43. The court in Actavis UK Limited provided a reformulation of the three questions in *Improver*<sup>3</sup> to provide guidelines or helpful assistance in connection with this second issue. These reformulated questions are:

(i) Notwithstanding that it is not within the literal meaning of the relevant claim(s) of the patent, does the variant achieve substantially the same result in substantially the same way as the invention, i.e. the inventive concept revealed by the patent?

(ii) Would it be obvious to the person skilled in the art, reading the patent at the priority date, but knowing that the variant achieves substantially the same result as the invention, that it does so in substantially the same way as the invention?

(iii) Would such a reader of the patent have concluded that the patentee nonetheless intended that strict compliance with the literal meaning of the relevant claim(s) of the patent was an essential requirement of the invention?

44. In order to establish infringement in a case where there is no literal infringement, a patentee would have to establish that the answer to the first two questions was “yes” and that the answer to the third question was “no”.

45. I think the issue of whether there is immaterial difference can be answered by looking at the first of these questions. It is my opinion that an electric vehicle which has the option of permanently installing a range extender – i.e. the BMW i3 BEV and REX – is a quite different inventive concept to having an electric vehicle in which the range extender, or parts thereof, can be readily removed. The result of the Patent is an electric vehicle with a hand portable and readily removable means of generating on-board power – which can be installed/removed on a per journey basis. Such a result is not achieved by the BMW i3 BEV or the BMW i3 REX

46. Therefore it is my opinion that the BMW i3 does not vary from the Patent in a way(s)

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<sup>3</sup> *Improver* [1990] FSR 181

that is immaterial.

### **Opinion**

47. It is my opinion that the BMW i3 as specified in the request does not fall within the scope of the claims as a matter of normal interpretation, nor does the BMW i3 vary from the patent in a way that is immaterial. Accordingly it is my opinion that any actions in relation to the BMW i3, in particular its sale, do not constitute infringement of GB2481806 B.

### **Application for review**

48. Under section 74B and rule 98, the proprietor may, within three months of the date of issue of this opinion, apply to the comptroller for a review of the opinion.

Benjamin Widdows  
Examiner

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### **NOTE**

*This opinion is not based on the outcome of fully litigated proceedings. Rather, it is based on whatever material the persons requesting the opinion and filing observations have chosen to put before the Office.*