

3. An invention shall be taken to involve an inventive step if it is not obvious to a person skilled in the art having regard to any matter which forms part of the state of the art by virtue only of section 2(2) above (and disregarding section 2(3) above).

The Application

5 The application concerns a system for monitoring usage of heavy goods vehicle trailers to ensure they are appropriately maintained. Each trailer is fitted with an RFID tag which can be read by tag readers located in places the trailer will visit. The RFID tag allows the trailer to be identified and also monitors rotation of one of the trailer wheels. When the trailer is close enough to one of the tag readers, the information on its tag is read and transmitted to a control centre where it is used to schedule maintenance of the trailer based on the distance it has travelled.

6 The application was last amended with the attorney's letter of 21 March 2013. It comprises seven claims in total of which claim 1 is the only independent claim. All the discussion at the hearing was focussed on claim 1 and that is where I shall focus my attention. It reads as follows:

1. A monitoring system for use in ensuring correct servicing of a heavy goods vehicle trailer, which monitoring system comprises the heavy goods vehicle trailer, at least one radio frequency identification tag, and a plurality of readers for reading the radio frequency identification tag and transmitting information from the radio frequency identification tag to a database in a control centre; and the monitoring system being such that:

i) the heavy goods vehicle trailer comprises a chassis, a body which is mounted on the chassis and which is for carrying goods, the radio frequency identification tag, and a protective holder for the radio frequency identification tag,

ii) the radio frequency identification tag is positioned on the chassis and adjacent a wheel of the trailer,

iii) the radio frequency identification tag counts the number of revolutions of the wheel for ensuring that servicing of the trailer is carried out at correct intervals,

iv) the radio frequency identification tag provides information on the identity of the heavy goods vehicle trailer,

v) the radio frequency identification tag is located in the protective holder, the protective holder protects the radio frequency identification tag from environmental conditions, and the protective holder permits operation of the radio frequency identification tag and

vi) the readers are positioned at different places at which the trailer will visit, whereby information on the trailer is able to be transmitted by the readers at the different places to the database in the control centre whereby up-to-date data on the trailer is able to be provided.

The Approach for assessing inventive step

- 7 The approach to be followed when assessing whether an invention provides an inventive step is that laid down by the Court of Appeal in *Pozzoli*¹. That test comprises the following steps:
- (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.
- 8 The first step requires me to identify the skilled person and the relevant common general knowledge of that person. In my view the skilled person is someone involved in remotely monitoring vehicle parameters and tracking their location. The Manual of Patent Practice provides useful guidance as to the qualities that the skilled person possesses drawing together as it does guidance from various court judgments where this has been considered. For example at paragraph 3.20 the Manual makes it clear that the skilled person “is not a highly skilled expert or Nobel prize winner, nor is he some form of lowest common denominator. Instead he is best seen as someone who is good at their job, a fully competent worker”. And at paragraph 3.21 the Manual suggests “He should be taken to be a person who has the skill to make routine workshop developments but not to exercise inventive ingenuity or think laterally”. I will endeavour to assess the invention through the eyes of a person having those qualities.
- 9 As regards the common general knowledge of that skilled person, I consider (s)he would be aware of the tools and techniques commonly used in remotely monitoring vehicle parameters and tracking their location.
- 10 As regards step 2, Mr Jones was at pains to stress that all the features recited in claim 1 contribute to the inventive concept. Thus he said the specific location of the RFID tag on the trailer, the provision of the protective cover, the counting of wheel rotations, provision of trailer identification information and the provision of multiple tag readers at locations the trailer is likely to visit all contributed to the inventive concept. In short he said the inventive concept was the system having the features recited in claim 1.
- 11 That the applicants (via their attorney) have characterised the inventive concept in this way is hardly surprising given the evolution of claim 1 as currently on file; it has been serially amended to incorporate a multitude of features which are not all shown in any of the documents cited by the examiner. That does not lend itself to a straight

¹ *Pozzoli SPA vs BDMO SA* [2007] EWCA Civ 588

forward identification of the inventive concept but I am content to accept that they do all contribute to the inventive concept. For the sake of clarity I will summarise the inventive concept of claim 1 as being

a system for use in determining maintenance requirements of a heavy goods vehicle trailer wherein 1) the trailer includes an RFID tag attached to its chassis and adjacent to one of its wheels for identifying the trailer and counting revolutions of the wheel, the tag being enclosed in a protective cover that still allows it to operate and 2) a plurality of tag readers placed at locations that the trailer will likely visit for reading the tag and transmitting information from the tag to a control centre.

- 12 There are a number of further observations that I should make regarding claim 1 (and the above characterisation of the inventive concept). First the application is completely silent as to how revolutions of the wheel are detected and indeed whether the detection is carried out by a component of the tag or whether there is a separate detector whose output is monitored by the tag. Whilst that of itself does not cause any particular difficulty, it does not help interpret the scope of the feature that the RFID tag is “adjacent a wheel of the trailer”. Whilst it is self evident that the closer the tag is to the wheel the more reliable the detection by the tag or transmission of signals to the tag might be, it does not help interpret what the upper limit of “adjacent to” might be.
- 13 Furthermore, whilst the claim specifies that the protective cover is such that it protects the tag from environmental conditions whilst still allowing it to function as an RFID tag, the application is totally silent as to how this is achieved and indeed the protective cover is not shown in any of the drawings.
- 14 Third, the above characterisation of the inventive concept reflects the fact that there are in effect two parts to the invention recited in the claim – the tags themselves and the remote monitoring system including multiple tag readers. There is no actual synergy between those two parts since the number and location of the tag readers is in no way dependent on the characteristics of the tags and vice versa.
- 15 The third step, identifying the differences between the matter cited as forming the state of the art and the inventive concept was the subject of much of the discussion at the hearing. In the final examination report issued before the hearing the examiner cited three documents as demonstrating that the claimed invention lacks the required inventive step:
 - US 6496102 (Kyrtos)
 - WO 2007/095761 (Ontario)
 - US 2007/146159 (Kato)
- 16 Kyrtos discloses a system for using an RFID tag fixed to a truck to provide diagnostic information to the operator of the truck so that they know when servicing or maintenance is required. In the specific embodiment the information indicates to the vehicle operator when brake wear for a particular vehicle has reached a problem level. It acknowledges that electronic odometers are well known and in the

embodiment senses rotation of an axle in calculating the distance that the vehicle has travelled. The information stored on the tag is periodically read by an external transceiver for analysis by the operator. The location of the tag is not specified in the description of Kyrtsos but in figure 2 it is shown attached to the storage compartment of the vehicle.

- 17 Ontario discloses a system for using RFID tags to centrally monitor how much a hired item has been used so that scheduled maintenance can be performed. As disclosed the hired item can be a vehicle such as a bulldozer and an odometer reading (ie the distance travelled by the item) can be used as the indicator of the amount that the item has been used. The information on how much a particular item has been used is stored on its RFID tag with the tags being interrogated by one or more readers which then transmit the information to a central management controller. With reference to the features of present claim 1, Ontario does not specify how the odometer reading is obtained or where the RFID tag is positioned on the item being monitored.
- 18 Kato discloses a system for real-time monitoring of the location of railcars in a railway network. Each railcar carries an RFID tag that allows it to be identified and the tags are read by readers located at track branches eg at the entry and exit of a goods yard thus allowing the position of each and every railcar to be accurately monitored by a central operations room.
- 19 In the examiner's view the invention defined in claim 1 is obvious in view of the disclosure of either Kyrtsos or Ontario when combined with Kato and in light of the common general knowledge of the skilled person. At the hearing and indeed in some of the correspondence with the examiner, there was a good deal of discussion as to the correct approach to be followed in assessing inventive step against combinations of documents and the common general knowledge. For his part, Mr Jones felt only one document could be considered along with common general knowledge in that assessment. Whilst that might be attractive from his point of view given the facts of this case, I think trying to be overly formulaic on the interaction between cited prior art and common general knowledge risks losing sight of the basic requirement in the Act that to be patentable, an invention must make an inventive step. That is what I shall focus on.
- 20 So what differences exist between the cited prior art and the inventive concept and are those differences obvious? In my view Kyrtsos is the closest piece of prior art and that is where I shall begin. The first possible difference is what is counted – in Kyrtsos distance travelled is determined by counting axle rotations whereas in present claim 1 rotation of a wheel is counted. The next difference is location of the RFID tag – in Kyrtsos the location of the tag is not mentioned except that in one figure it is shown attached to the side of the vehicle's storage compartment whereas present claim 1 requires it to be located on the trailer chassis adjacent the wheel and in a protective holder. Finally, Kyrtsos only refers to the system including "a reader" whereas present claim 1 specifies that the system includes a plurality of readers at different places visited by the trailer.
- 21 As for Ontario, whilst this does disclose the provision of multiple tag readers (to give more precise or up-to-date information) it does not specify what is measured to give

the odometer reading, the location of the tag on the vehicle or the provision of a protective cover.

- 22 In my view Kato adds nothing of relevance to the determination of inventive step beyond reinforcing the point that the provision of multiple readers is a known way to improve tracking of vehicles.
- 23 So when viewed without any knowledge of the invention, do those differences constitute steps that would have been obvious to the skilled person? I have little doubt that in the majority of cases an invention providing multiple differences over an individual piece of prior art would be deemed to make an inventive step. However in the present case each of the differences identified is so trivial that I fail to see how the invention can be said to provide an inventive step even when viewed in its entirety.
- 24 Taking the differences in turn, for a trailer of the sort disclosed in Kyrtzos, one rotation of the axle will equate to one rotation of the wheels on that axle. Claim 1 does not actually require rotation of the wheels to be detected by the tag, merely counted. Thus on one view, there may well be no difference between counting rotations of the axle and rotations of the wheel. But even if there is a difference, I consider that the skilled person would appreciate that you could equally well measure rotation of the wheel as the axle without exercising any inventive ingenuity.
- 25 As for location of the tag, if you are interested in tracking movement of the trailer rather than say containers carried on the trailer, it is self evident that the tag needs to be located on the trailer itself. Thus in my view there is no inventive step in specifying that the tag is located on the trailer structure. As I have indicated above, the scope of "adjacent" the wheel is not easy to interpret since the present specification gives no indication of how the rotation of the wheel is detected. Again, however, it is self evident that the closer the tag is to the wheel, the more reliably it is likely to perform its counting role irrespective of whether the detection is performed by a component on the tag or by a detector that the tag communicates with. Thus I can see no inventive step in specifying that the tag is placed adjacent to the wheel whose rotation it is counting.
- 26 As for the provision of a protective cover for the tag, any road user would immediately recognise that the outside of a road vehicle is a hostile environment for monitoring equipment and I consider the skilled person would not have to exercise any inventive ingenuity in overcoming that problem by providing a protective cover for the tag. Indeed I would go so far as to say that the use of a protective cover to protect an item deployed in a hostile environment would be within the common general knowledge of the skilled person. If there was any invention in the way that protection is provided whilst still allowing the tag to perform its intended function I would have expected to see some disclosure of the composition or construction of the cover. As indicated above however, the specification contains no such detail whatsoever.
- 27 Finally as regards Kyrtzos, whilst that document only refers to "a transmitter/receiver" it is self evident that the timeliness of information provided by a system for tracking vehicles relying on tag readers at fixed positions will be severely limited if there is only one reader and will be enhanced by providing more readers at places the

vehicle is likely to visit. In my view the skilled person would consider it entirely obvious to provide more than one tag reader in the remote monitoring part of the system, particularly since the benefit of doing so is known in the art as demonstrated for example in Ontario .

- 28 In my view the differences between the disclosure in Kyrtos and the inventive concept of claim 1 would be entirely obvious to the skilled person.
- 29 As regards Ontario, the skilled person would consider counting rotations of the wheel to be an entirely obvious way to provide the odometer reading disclosed therein and I do not consider that to constitute an inventive step. For the reasons given above I do not consider specifying the location of the tag or the inclusion of a protective cover to provide the required inventive step and thus I consider claim 1 lacks an inventive step over Ontario too.

Conclusion

- 30 I have found that the differences between the inventive concept of the system defined in claim 1 and the disclosures of Kyrtos and Ontario would be obvious to the skilled person and that claim 1 does not involve an inventive step contrary to section 1(1)(b).
- 31 I have reviewed the remaining claims and the remainder of the specification and can identify nothing that could form the basis of a valid claim. I therefore refuse the application under section 18(3) for failure to comply with section 1(1)(b).

Appeal

- 32 Any appeal must be lodged within 28 days

A BARTLETT

Deputy Director acting for the Comptroller.