Patents Registry

Intellectual Property Department

Hong Kong SAR Government

Patents Examination Guidelines

Section 2: Inventive Step

Meaning of inventive step

2.1. The second condition for patentability of an invention under section 9A(1) of the Ordinance is that the invention involves an inventive step, which is defined in section 9C of the Ordinance as follows:

"An invention is to be regarded as involving an inventive step if, having regard to the state of the art, it is not obvious to a person skilled in the art."

2.2. The basic test of assessing inventive step which may alternatively be referred to as non-obviousness is whether the invention was obvious to a person skilled in the art having regard to any matter which forms part of the state of the art at the relevant time.

2.3. The question of inventive step only arises if the invention is considered novel.

State of the art

2.4. The state of the art for the purposes of considering inventive step is set out in section 9B(2) (see section 1.2. -"State of the art"), and also section 9C(2) of the Ordinance which explicitly excludes later published standard, short-term or designated patent applications referred to in section 9B(3) of the Ordinance. Therefore, the state of the art for assessing inventive step is narrower than that for assessing novelty.

Test for inventive step

2.5. The approach for assessing inventive step was set out in *Windsurfing International Inc. v Tabur Marine (Great Britain) Ltd.* [1985] RPC 59 which has been applied by the Courts of the Hong Kong SAR in *Canon Kabushiki Kaisha v Green Cartridge Company (Hong Kong) Limited & Another* [1996] 1 HKLRD 69; *Tanashin Denki Co. Ltd. v King Long Industrial Ltd.* [1997] 4 HKC 217; and *Environmental Systems Product Holdings Inc v DPC Technology Ltd.* [2010] 3 HKLRD 212.

2.6. In *Windsurfing International Inc.*, the English Court of Appeal held that the question of obviousness—

"has to be answered, not by looking with the benefit of hindsight at what is known now and what was known at the priority date and asking whether the former flows naturally and obviously from the latter, but by hypothesizing what would have been obvious at the priority date to a person skilled in the art to which the patent in suit relates."

2.7. It is clear from *Windsurfing International Inc.* that inventive step must be assessed at the priority date of the claim in question, if applicable. This was noted by Jacob LJ in *Actavis v Merck* [2008] RPC 26:

"...one might assume that when an invention becomes obvious it must remain so thereafter. But such an assumption would be wrong: obviousness must be determined as of a particular date. There is at least one other well-known example showing how an invention which might be held obvious on one date, would not be so held at a later date. That is where there has been commercial success following a long-felt want. Time can indeed change one's perspective. The perspective the court must bring to bear is that of the skilled man at the priority date and not any earlier time."

2.8. In assessing whether an invention is obvious, it was held in *Windsurfing International Inc.* that the following four-stage approach should be taken:

(a) Identify the claimed inventive concept.

(b) Assume the mantle of the normally skilled but unimaginative addressee in the art at the priority date and to impute to him

what was, at that date, common general knowledge of the art in question.

(c) Identify what, if any, differences exist between the matter cited as being "known or used" and the alleged invention.

(d) Decide, without any knowledge of the alleged invention, whether these differences constitute steps which would have been obvious to the skilled man or whether they require any degree of invention.

2.9. The Windsurfing four-stage approach was subsequently reviewed by the English Court of Appeal in *Pozzoli v BDMO SA* [2007] FSR 37 and reformulated, without being superseded, as follows:

(a)(i) Identify the notional "person skilled in the art"

~~(a)~~(ii) Identify the relevant common general knowledge of that person;

(b) Identify the inventive concept of the claim in question or if that cannot readily be done, construe it;

(c) 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; and

(d) 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?

2.10. In essence, the *Pozzoli approach*, having considered that *"it is only through the eyes of the skilled man that one properly understand what such a man would understand the patentee to have meant and thereby set about identifying the concept"*, has re-ordered the first two steps in the Windsurfing approach and elaborated the first step into two steps for firstly identifying the attributes of the notional "person skilled in the art" (the statutory term) and secondly identifying the common general knowledge of such a person.

2.11. The reformulated approach was adopted by the Courts of the Hong Kong SAR in *Octopus Cards Limited v Odd HK Limited*, unrep., HCMP 104/2007, 17 March 2009, L. Chan DHCJ; and *Environmental*

Systems Product Holdings Inc v DPC Technology Ltd. [2010] 3 HKLRD 212.

2.12. The Windsurfing/Pozzoli approaches for determining inventive step are however not a substitute for the sole and fundamental statutory question "is it obvious" (see *Instance v Denny* [2002] RPC 14; *SmithKline Beecham Plc v Apotex Europe Ltd* [2005] FSR 23). This was explained by Jacobs LJ in *Generics v Daiichi* [2009] RPC 23 as follows:

"There is at bottom only one test, namely that posed by Art.56 of the EPC transposed into UK law by s.3 of the Patents Act 1977. Was the invention obvious to a person skilled in the art having regard to any matter which forms part of the state of the art? Judicial or patent office attempts to formulate the test in other words, or to provide a formula, can be helpful, provided that one does not lose sight of the statutory question. One must not take any such other test or formula as if it were the statute — they are only tools for answering the statutory question. Adherence to any rigid formula can be a mistake."

2.13. Being fully aware of the importance of avoiding the error of applying hindsight reasoning and failing to distinguish what was known from what was common general knowledge, the Registrar ~~of Patents~~ generally adopts the Pozzoli approach when assessing an inventive step. A preliminary step to the assessment of inventive step is to assume the mantle of the skilled person and identify the common general knowledge of that skilled person.

Person skilled in the art

2.14. The first and foremost step in the Pozzoli approach requires the identification of the person skilled in the art. The identification of such a person may affect a number of disparate issues relating to the law of patents since the "person skilled in the art" is expressly referred to in the statutory provisions relating to inventive step (section 9C(1) of the Ordinance) and the issues of construction and insufficiency (sections 76(3)(b), 77, 91(1)(c) & 149(2A)(b) of the Ordinance).

2.15. In *Improver Corporation and Another v Raymond Industrial Ltd. and Another* [1989] HKCFI 368, the Hong Kong Court of Appeal made reference to the classic statement of Lord Reid in in *Technograph*

Printed Circuits Ltd. v. Mills and Rockley (Electronics) Ltd. (1972) RPC 346 at 355:

"To whom must the invention be obvious? It is not disputed that the hypothetical addressee is a skilled technician who is well acquainted with workshop technique and who has carefully read the relevant literature. He is supposed to have an unlimited capacity to assimilate the contents of, it may be, scores of specifications but to be incapable of a scintilla of invention. When dealing with obviousness, unlike novelty, it is permissible to make a 'mosaic' out of the relevant documents, but it must be a mosaic which can be put together by an unimaginative man with no inventive capacity."

2.16. Therefore, a person skilled in the art is assumed to be a person who has the skill to make routine workshop developments in the field of technology in question but does not have an inventive mind. He should also be presumed to have had access to all the relevant prior art. However, the English Court of Appeal in *PLG Research Ltd and anr. v Ardon International Ltd and others* [1995] RPC 287 held that knowing a piece of prior art is one thing but appreciating its significance to the solution to the problem in hand was another. One must not casually assume that the significance of existing published material in relation to the problem dealt with by the patent in suit would necessarily be apparent to the skilled person (see *Sandoz Ltd (Frei's Application)* [1976] RPC 449).

2.17. [Deleted] ~~It is also notable that unlike novelty, it is permissible to deal with the question of inventive step based on a mosaic of documents. In other words, it is permissible to combine different technical contents disclosed in one or more prior art documents to assess the claimed invention when determining the question of inventiveness.~~

2.18. The "person skilled in the art" may be a team of people having different skills. This may apply, for example, in certain advanced technologies and in highly specialized processes such as the commercial production of integrated circuits or of complex chemical substances. The English Court of Appeal in *General Tire & Rubber Co. v Firestone Tyre & Rubber Co. Ltd.* [1972] RPC 457 stated the following:

"If the art is one having a highly developed technology, the notional skilled reader to whom the document is addressed may not be a

single person but a team, whose combined skills would normally be employed in that art in interpreting and carrying into effect instructions such as those which are contained in the document to be construed."

2.19. However, disputes as to the composition of the team frequently arise as the "person skilled in the art" for the purpose of assessing inventive step may not necessarily comprise a team made up of experts with all the different skills needed to perform the invention. In *Schlumberger Holdings Ltd v Electromagnetic Geoservices AS* [2010] RPC 33, the English Court of Appeal considered the unusual situation where the invention resided in the fusion of two distinct fields of technology. Without the hindsight provided by the patent in suit in that case, it was not realistic to consider the skilled person to be a team comprised of persons in what had been, prior to the patent, two separate arts. In the Hong Kong SAR, the Court in *SNE Engineering Co. Ltd. v Hsin Chong Construction Co. Ltd.* [2014] 2 HKLRD 822, upon citing the *Schlumberger* case, affirmed that the person skilled in the art for inventive step is not necessarily the same person skilled in the art for performing the invention once it is made without elaborating further on the role of the person skilled in the art due to the facts of the case.

2.20. Accordingly, to a large extent the capacities of the skilled person in the art will be determined by the relevant common general knowledge which is what makes the skilled person skilled.

Common general knowledge of the person skilled in the art

2.21. Turning to the identification of the relevant common general knowledge of the person skilled in the art, the Hong Kong Court of First Instance in *Tanashin Denki Co. Ltd. v King Long Industrial Ltd.* [1997] 4 HKC 217 affirmed the English court's definition of "common general knowledge":

"Common general knowledge has been referred to as being the information known to duly qualified persons engaged in the particular art or science: see British Thomson-Houston Co. Ltd. v. Stonebridge Electrical Co. Ltd. 33 RPC 166 at 171. It is part of the mental equipment which is necessary for competency in the particular field under consideration."

2.22. It is not enough to say that everything which is capable of being referred to is common general knowledge. In this regard, a useful guidance on the description of common general knowledge can be obtained from Laddie J in *Raychem Corp's Patents* [1998] RPC 31:

"The common general knowledge is the technical background of the notional man in the art against which the prior art must be considered. This is not limited to material he has memorized and has at the front of his mind. It includes all that material in the field he is working in which he knows exists, which he would refer to as a matter of course if he cannot remember it and which he understands is generally regarded as sufficiently reliable to use as a foundation for further work or to help understand the pleaded prior art. This does not mean that everything on the shelf which is capable of being referred to without difficulty is common general knowledge nor does it mean that every word in a common text book is either. In the case of standard textbooks, it is likely that all or most of the main text will be common general knowledge. In many cases common general knowledge will include or be reflected in readily available trade literature which a man in the art would be expected to have at his elbow and regard as basic reliable information."

2.23. Common general knowledge, when contested, is a matter of evidence. The Hong Kong Court of First Instance in *Tanashin Denki Co. Ltd. v King Long Industrial Ltd.* [1997] 4 HKC 215 recognized that common general knowledge is primarily proved by expert witnesses who are drawn from the same field(s) as the skilled person:

"*Before the court can be satisfied that a particular matter is common general knowledge it must be satisfied that a witness has not an excess of any peculiar or special sort of knowledge but that he is giving evidence of matters he has learnt in the ordinary practice as a man engaged in the art."*

Inventive concept

2.24. The second step in the Pozzoli approach requires the identification of the inventive concept which was explained by Lord Walker in *Generics (UK) Limited v H Lundbeck A/S* UKHL 12 [2009] RPC 13 as follows:

"'Inventive concept' is concerned with the identification of the core (or kernel, or essence) of the invention—the idea or principle, of more or less general application (see Kirin-Amgen [2005] RPC 169 paras 112-113) which entitles the inventor's achievement to be called inventive. The invention's technical contribution to the art is concerned with the evaluation of its inventive concept—how far forward has it carried the state of the art? The inventive concept and the technical contribution may command equal respect but that will not always be the case."

2.25. Jacob LJ had earlier observed in *Unilever PLC v Chefaro Proprietaries Ltd* [1994] RPC 567 that the identification of the inventive concept of a claim involves asking what the claim means to the skilled person in the art:

"It is the inventive concept of the claim in question which must be considered, not some generalised concept to be derived from the specification as a whole. Different claims can, and generally will, have different inventive concepts. The first stage of identification of the concept is likely to be a question of construction: what does the claim mean? It might be thought there is no second stage -- the concept is what the claim covers and that is that. But that is too wooden and not what courts, applying Windsurfing stage one, have done. It is too wooden because if one merely construes the claim one does not distinguish between portions which matter and portions which, although limitations on the ambit of the claim, do not. One is trying to identify the essence of the claim in this exercise."

2.26. Lord Hoffmann in *Conor v Angiotech* [2008] RPC 716 explained that the inventive concept is embodied in the claims:

"The patentee is entitled to have the question of obviousness determined by reference to his claim and not to some vague paraphrase based upon the extent of his disclosure in the description."

It is therefore important to have a properly drafted claim that states the inventive concept concisely.

Prior art base

2.27. The third step in the Pozzoli approach requires the identification of what the prior art is teaching the skilled person and the gap between that teaching and the inventive concept. Therefore, the starting-point for an inventive step objection may be any disclosure from the relevant state of the art. The general principle was set out by Laddie J in *Pfizer Ltd's Patent* [2001] FSR 16:

"A real worker in the field may never look at a piece of prior art — for example he may never look at the contents of a particular public library — or he may be put off because it is in a language he does not know. But the notional addressee is taken to have done so. This is a reflection of part of the policy underlying the law of obviousness. Anything which is obvious over what is available to the public cannot subsequently be the subject of valid patent protection even if, in practice, few would have bothered looking through the prior art or would have found the particular items relied on."

2.28. As pointed out by ~~explained~~Lord Reid in *Technograph Printed Circuits Ltd. v. Mills and Rockley (Electronics) Ltd.* as cited ~~above~~ in section 2.1~~7~~5 above, it is permissible when dealing with the question of inventive step to combine different technical contents disclosed in one or more prior art disclosures or to make a 'mosaic' out of the relevant disclosures. However, the question whether it is obvious to combine different disclosures together is one to be considered in the light of the particular circumstances of the case.

2.28A. For instance, the examiner will consider ~~whether there is a reasonable basis or motivation for expecting the person skilled in the art, when facing the problem at hand, to combine the contents of two or more disclosures (e.g. documents).~~whether there is any teaching in the prior art as a whole that not simply could, but would have prompted the person skilled in the art to combine the contents of two or more disclosures (e.g. documents) in such a way as to arrive at the invention. In other words, the point is not whether the person skilled in the art could have arrived at the invention by combining the contents of two or more disclosures, but whether he would have done so because the prior art provided motivation to do so in the expectation of some improvement or advantage.

Assessing obviousness

2.29. The final step of the Pozzoli approach requires the examiner to determine whether the differences that exist between the prior art and the inventive concept constitute steps which would have been obvious to the person skilled in the art or whether they require any degree of invention.

2.30. It is a question of fact in every case as held by Kitchin J in *Generics v Lundbeck* [2007] RPC 32:

"The question of obviousness must be considered on the facts of each case. The court must consider the weight to be attached to any particular factor in the light of all the relevant circumstances. These may include such matters as the motive to find a solution to the problem the patent addresses, the number and extent of the possible avenues of research, the effort involved in pursuing them and the expectation of success."

2.31. The final step of the Pozzoli approach has to be answered without the hindsight provided by the invention.

2.32. In the assessment of obviousness, the following non-exhaustive factors relating to the surrounding circumstances may be taken into account as secondary considerations:

(a) Long-felt want

(b) Commercial success

(c) Overcoming a technical prejudice

(d) Producing unexpected technical result

Long-felt want

2.33. Evidence that the invention has solved a technical problem which was desired to be solved for a long time may be a material factor in consideration for inventive step.

Example

The problem of permanently marking farm animals such as cows without causing pain to the animals or damage to the hide has existed since farming began. An inventor has successfully solved this technical problem by a solution of freeze-branding on the

basis of the discovery that the hide can be permanently pigmented by freezing. The invention may be regarded as involving an inventive step.

Commercial success

2.34. Evidence that the invention has been commercially successful may be a material factor in consideration for inventive step although it may be difficult to prove in the early stages of the development.

2.35. In *Haberman v Jackel* [1999] FSR 685 , Laddie J considered the following non-exhaustive list of questions as relevant when considering commercial success of an invention:

(a) What was the problem which the patented development addressed?

(b) How long had that problem existed?

(c) How significant was the problem seen to be?

(d) How widely known was the problem and how many were likely to be seeking a solution?

(e) What prior art would have been likely to be known to all or most of those who would have been expected to be involved in finding a solution?

(f) What other solutions were put forward in the period leading up to the publication of the patentee's development?

(g) To what extent were there factors which would have held back the exploitation of the solution even if it was technically obvious?

(h) How well had the patentee's development been received?

(i) To what extent could it be shown that the whole or much of the commercial success was due to the technical merits of the development?

2.36. Therefore, it is important to distinguish commercial success of the invention from other causes such as branding or advertising which have nothing to do with the technical merits of the invention. In fact, it is common that the evidence of commercial success is coupled with evidence of a long-felt want.

Overcoming a technical prejudice

2.37. An invention may be regarded as non-obvious if it goes against the generally accepted views and practices of the skilled person in a particular field of technology.

Example

It was generally believed that in an electric motor the smoother the interface of the commutator and the brush is, the better the contact is and the smaller the current consumption is. The invention produces coarse microgrooves on the surface of the commutator, and the current consumption is even smaller than that with a smooth surface. Because the invention has overcome the technical prejudice, it may be regarded as involving an inventive step.

2.38. However, it is necessary to distinguish technical prejudice from mere commercial prejudice as explained by Pumfrey J in *Cipla Ltd. v Glaxo Group Ltd* [2004] RPC 43:

"Such a prejudice may be a merely commercial one ('this device won't sell') or it may be a technical one ('this won't work and it is not worth bothering with'). A twenty-year monopoly is conferred for overcoming a prejudice of the second kind, but not for overcoming a commercial prejudice (see Hallen v Brabantia [1989] RPC 307 (Aldous J)). A technical prejudice must be general: it is not enough that some persons actually engaged in the art at the material time labour under a particular prejudice if a substantial number of others do not. A prejudice which is insufficiently widespread for it properly to be regarded as commonly shared will not, in my view, be attributed to the notional skilled person."

Producing unexpected technical result

2.39. If an invention produces a surprising and unexpected technical result to a person skilled in the art, it may be regarded as non-obvious.

Example

It is known that high-frequency power can be used in inductive butt welding. It should therefore be obvious that high-frequency power could also be used in conductive butt welding with similar effect. An inventive step might exist in this case, however, if high-frequency power were used for the continuous conductive butt welding of a coiled strip but without removing scale (such scale removal being ordinarily necessary in order to avoid arcing between the welding contact and the strip). The unexpected result is that scale removal is found to be unnecessary because at high frequency the current is supplied in a predominantly capacitive manner via the scale which forms a dielectric.

2.40. It is, however, important to note that an added benefit (even an unexpected one) will not stop a claimed invention being obvious if it as claimed is obvious for another purpose. In *Hallen v Brabantia* [1991] RPC 195 that, the English court dismissed the appeal of the Plaintiffs who sought relief for infringement of a patent relating to the invention for corkscrews that were coated with a layer of friction-reducing material and held the following:

"The dramatic improvement in extraction was for the plaintiffs a golden bonus; but it is common ground that an added benefit, however great, will not found a valid patent if the claimed innovation is obvious for another purpose."

Selection invention

2.41. In determining the inventive step of a selection invention which involves the selection of individual elements, sub-sets, or sub-ranges from a broader class as discussed in section 1.41, an important consideration is whether the selection can bring about an unexpected technical result.

(a) If the invention is merely an arbitrary selection from a number of known possibilities or consists merely in choosing from a number of equally likely alternatives, it may not be regarded as involving an inventive step.

Example

While many processes of heating have been disclosed in the prior art, the invention resides in selecting a known electrically heating process for a known chemical reaction requiring heating, and the

selection does not produce any unexpected technical result. Therefore, the invention may not be regarded as involving an inventive step.

(b) If the invention is connected to a choice of particular dimensions, temperature ranges or other parameters from a limited range of possibilities, while such choice would have been made by the person skilled in the art by routine trial-and-error or by the application of normal design procedures in the hope of solving the underlying technical problem or in expectation of some improvement, the invention may not be regarded as involving an inventive step.

Example

The invention relates to a process for carrying out a known reaction and is characterized by a specified flow rate of an inert gas. Since the determination of the flow rate can be made by the person skilled in the art through conventional calculations, the invention may not be regarded as involving an inventive step.

(c) If the invention can be arrived at merely by a simple extrapolation in a straightforward way from the prior art, it may not be regarded as involving an inventive step.

Example

The invention is to improve the thermal stability of a composition Y, characterized by the use of a specified minimum content of a component X in the composition Y, while in fact the specified minimum content of component X can be derived from the relation curve between the content of component X and the thermal stability of composition Y. Therefore, the invention may not be regarded as involving an inventive step.

(d) If the invention involves a special selection which produces an unexpected technical result, the invention may be regarded as involving an inventive step.

Example

In a prior art document disclosing the production of thiochloroformic acid, the proportion of catalytic agent of carboxylic acid amide and/or urea to 1 mol raw material mercaptan is more than 0 and less than or equal to 100 % (mol).

In the given example, the amount of the catalytic agent is 2-13% (mol), and it is indicated that the productivity starts to increase from 2% (mol) of the amount of catalytic agent. Moreover, the skilled person generally turns to increase the amount of catalytic agent in order to improve productivity. In the selection invention concerning a process for producing thiochloroformic acid, less amount of catalytic agent is used (0.02-0.2% (mol)), but the productivity is increased by 11.6-35.7%, greatly exceeding the expected productivity, and moreover, the processing of reactant is also simplified. All of these show that the technical solution selected by this invention has produced unexpected effects and thus the invention may be regarded as involving an inventive step.

Combination vs. juxtaposition or aggregation

2.42. In determining the inventive step of an invention which consists of a claim that is a combination of features, consideration will be made to the following factors: whether those combined features functionally support each other, the difficulty or easiness of combination, any technical motivation to make the combination in the prior art, and the technical effect of the combination.

2.43. Non-inventive combination of features:

If a claimed invention is merely an aggregation or juxtaposition of certain known products or processes, each performing its own proper function independently of any of the others, and the overall technical effect is just the sum of the technical effects of each part without any functional interaction between the combined technical features, that is, the claimed invention is just a mere aggregation of features and not a true combination, the invention by combination may not be regarded as involving an inventive step.

Example

The invention concerns a ball point pen with an electronic watch, wherein the solution is merely to fix a known electronic watch on a known ball point pen. After combination, the electronic watch and the ball point pen still function as usual, without any functional interaction between them, and thus the invention is just a mere aggregation and may not be regarded as involving an inventive step.

Moreover, if the combination is just a variation of a known structure, or it falls into the scope of regular development of routine technology without any unexpected technical effect, the invention may not be regarded as involving an inventive step.

2.44. Inventive combination of features:

If the combined technical features functionally support each other and produce a new technical effect, or in other words, if the technical effect after combination is synergistic or greater than the sum of the technical effects of the individual features, such invention by combination may be regarded as involving an inventive step. Whether or not any of the technical features in the invention by combination is completely or partially known to the public does not affect the assessment of inventive step of the said invention.

Example

A mixture of medicines consists of a painkiller (analgesic) and a tranquilizer (sedative). It was found that through the addition of the tranquilizer, which intrinsically appeared to have no pain-killing effect, the analgesic effect of the pain-killer was intensified in a way which could not have been predicted from the known properties of the active substances. Therefore, the invention may be regarded as involving an inventive step.