



BL O/067/04

19<sup>th</sup> March 2004

**PATENTS ACT 1977**

BETWEEN

**ABB Switzerland Holding Ltd**

Claimant

and

**QinetiQ Limited**

Defendant

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PROCEEDINGS

Application under section 72(1)(d) for the revocation of  
patent number GB 2123163 B

HEARING OFFICER

S N Dennehey

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**DECISION**

**Background**

- 1 Patent number GB 2123163 B (“the patent”) was granted to the Secretary of State for Defence on 10 October 1985. On 19 November 2001 there was a change of ownership when QinetiQ Limited (“the proprietor”) was registered as proprietor in place of the Secretary of State for Defence. On 22 October 2002, ABB Switzerland Holding Ltd (“the claimant”) made an application to the Comptroller for revocation of the patent under section 72(1)(d) of the Patents Act 1977 (“the Act”). The ground relied on is that matter disclosed in the specification extends beyond that in the application as filed. The claimant says that this was a consequence of broadening amendments made to the claims during the prosecution of the patent application.
- 2 The proprietor filed a Counterstatement on 23 January 2003 denying the claimant’s case and asserting that the matter disclosed in the patent as granted had been disclosed in the application as filed.
- 3 The matter came before me at a hearing at which Mr Keith Howick of Carpmaels and Ransford appeared as agent for the claimant and Mr Richard Hacon instructed by patent agent Samuel Knight at QinetiQ Intellectual Property appeared as Counsel for the proprietor. Both sides provided me with skeleton arguments before the hearing.

## The Technical Field

- 4 The invention is concerned with liquid crystal displays, which typically consist of a cell composed of parallel sheets of glass or plastics substrate about 10 $\mu$ m apart containing a layer of liquid crystal material. Liquid crystal material has rod-shaped molecules which tend to align one with another, and can also be aligned with surface microstructure provided on the substrates. The orientation of the molecules can be influenced by an electric field, and electrodes are provided on the substrates to generate the field. Changing the orientation of the molecules has the effect of varying the transmission of light through the layer. Typically in the “on” state, the electric field is directed across the cell in the direction of the light path. The rod-shaped molecules align with the electric field, and in that orientation allow light to pass through the cell relatively unattenuated, giving a bright appearance. In the “off” state, the molecules relax, align parallel to the substrates and attenuate light passing through the cell, which consequently appears dark.
- 5 Liquid crystal displays commonly use plane-polarised light which is produced, rotated and blocked by the combined effects of polarising filters and the orientation of the liquid crystal molecules. The polarising path may be produced by placing a polarising filter on one or both sides of the cell. Alternatively, the liquid crystal material may be doped with a dye which is of a molecular structure such that in certain orientations it polarises light as it passes through the cell. Cells also commonly use a liquid crystal structure which is twisted or helical in the relaxed state. The helical arrangement guides the plane of polarisation in the “off” state so that it rotates as it passes through the cell, but the helical guiding effect is removed in the “on” state. The change in rotation is exploited to selectively allow or block transmission of the light.

## The Patent

- 6 The patent is concerned with such liquid crystal devices using a “long pitch cholesteric mixture in which the molecules naturally adopt a helical structure with the helix axes normal to the plane of the layer”. It is apparent that the invention is primarily concerned with improving the rate at which a liquid crystal display arrangement can be switched between its “on” and “off” states.
- 7 The wording of claim 1 follows below, showing the amendments that were made to the claim during prosecution. Those in italics show additions, and those in ~~strikeout~~ show deletions. The purpose of the amendments, as explained in the agent’s letter of 4 July 1985, was to include within the scope of the claims, a construction which did not include dye, which was described in lines 93 to 95 on page 3 of the specification as it was first published. It is apparent that this construction lies outside the scope of the original claim 1 since that claim required a dye component. The claim, with its amendments, reads as follows:

“1. A liquid crystal device comprising a layer of long pitch cholesteric liquid crystal material of positive dielectric anisotropy ~~and incorporating an amount of a pleochroic dye~~ *and incorporating an amount of a pleochroic dye* contained between two cell walls bearing electrode structures and being surface-treated to align liquid crystal molecules in a tilted homogeneous structure characterised in that the surface alignment and natural pitch  $p$  of the cholesteric material are matched

to provide a progressive molecular twist of greater than  $p$  and less than  $2p$  radians across the layer with a uniform tilt direction, the ratio of layer thickness  $d$  divided by pitch  $p$  lying between 0.5 and 1.0 with a value of  $d$  less than  $20\mu\text{m}$  and further characterised by means for selectively absorbing transmitted light depending upon the molecular orientation of the liquid crystal material whereby the device may be switched directly between a light transmissive ~~ON~~ state and a non transmissive ~~OFF~~ state with a sharp transmission/voltage characteristics without substantial hysteresis.”

8 New claims 2 and 3 were introduced at the same time and read as follows:

“2. The device of claim 1 wherein the means for selectively absorbing transmitted light is an amount of pleochroic dye incorporated in the liquid crystal material.”

“3. The device of claim 1 wherein the means for selectively absorbing transmitted light is two polarisers arranged optically in front of and behind the layer of liquid crystal material.”

Corresponding amendments were also made to the statement of invention and by introducing a passage corresponding to the new claims 2 and 3 after the statement of invention.

### **The Law**

9 The Act provides in section 72(1)(d) that a person may apply for the revocation of a patent in which the matter disclosed has been extended beyond that disclosed in the application as filed. It reads as follows:

“**72(1)** Subject to the following provisions of this Act, the court or the comptroller may on the application of any person by order revoke a patent for an invention on (but only on) any of the following grounds, that is to say -

(a) ...

(d) the matter disclosed in the specification of the patent extends beyond that disclosed in the application for the patent, as filed, or, ...

(e) the protection conferred by the patent has been extended by an amendment which should not have been allowed.”

10 Section 76 is also relevant. It provides:

“**76(2)** No amendment of an application for a patent shall be allowed under section 17(3), 18(3) or 19(1) if it results in the application disclosing matter extending beyond that disclosed in the application as filed.”

11 Mr Howick and Mr Hacon took me to authorities in which the issue of the addition of new subject matter has been considered. One leading precedent on added subject

matter is *Bonzel (T) and anr. v Intervention Limited and anr. (No 3)* [1991] RPC 553, in which Aldous J, as he then was, set out an approach to the assessment of the issue. It appears at page 574:

“The decision as to whether there was extension of disclosure must be made on a comparison of the two documents read through the eyes of a skilled addressee. The task of the court is threefold:

(1) To ascertain through the eyes of the skilled addressee what is disclosed, both explicitly and implicitly in the application.

(2) To do the same in respect of the patent as granted.

(3) To compare the two disclosures and decide whether any subject matter relevant to the invention has been added whether by deletion or addition. The comparison is strict in the sense that subject matter will be added unless such matter is clearly and unambiguously disclosed in the application either explicitly or implicitly.”

12 Mr Hacon referred me to *A.C. Edwards Ltd v Acme Signs & Displays Ltd* [1990] RPC 621 and on appeal at [1992] RPC 131, which addresses the existence and effect of disclosure in the claims as opposed to disclosure in the description. Aldous J at first instance followed the finding of Dillon LJ in the *Asahi Kasei Kogyo KK* case, that “the claims of patents and applications should be taken as a disclosure of their own and not merely as part of the general disclosure” and went on to say at page 642:

“In my judgment, it would be right to read section 130(3) against that background and to take into account the different purpose of the claims and the specification. Thus the claims are a disclosure of the matter for which the applicant claims protection and the specification is a disclosure of the description of the invention. Both sections 14(5) and 130(3) use the word 'matter' and I believe it right to construe section 130(3) as requiring the claims to be considered as a separate disclosure to that of the specification, but a disclosure of the matter for which protection is sought but not a description of the invention.”

Then in the next paragraph:

“Not everything within a claim is disclosed although it may fall within the ambit of the claim.”

13 This view was confirmed in the Court of Appeal. This judgment confirms that the disclosure in a specification is what is disclosed in the description and the claims and also that not everything within the scope of a claim is disclosed by it. The observations as to the different roles of the disclosures in the description and in the claims are not directly relevant to the present case.

14 Mr Howick took me to *Flexible Direction Indicators Ltd's Application* [1994] RPC 207 and made two points. The first related to a comment in the Principal Examiner's decision, at page 212:

“I understand from this that the claims in the present case also cover, but do not disclose, features on which they are silent. However, I do not find this helpful in

answering the question before me, which I see as this: Do the claims of the present application, and in particular the amended claims at present on file, disclose that the invention is workable throughout the whole area which they define, and if they do, does this constitute an addition of subject-matter over the specification as originally filed, which seemed, explicitly at least, to suggest that the workable area was more limited?"

15 Mr Howick said that that sort of test is highly relevant to the present case. I do not entirely agree with that. The Principal Examiner's remarks as to whether the invention is *workable* over the full range of its scope bring in a different consideration from that of added subject matter. They relate to the idea of testing for added subject matter by assessing whether a claim broadened by amendment continues to be supported by the description. I think whether such a test is appropriate depends very much on the facts of the case. Indeed in *Flexible Direction Indicators*, in the event, the Principal Examiner did not assess workability at all but applied the *Bonzel* approach directly. I think the idea of assessing workability, or support, might be helpful but that will depend on the facts of the case and on the arguments put forward.

16 The second of Mr Howick's points in relation to *Flexible Direction Indicators* was to examine how the specification is to be construed by the skilled reader. Both Mr Howick and Mr Hacon drew my attention to Aldous J's comments at page 226 which read:

"Mr Turner went further and submitted that the court was concerned with the effect that the application would have on the skilled reader. If the skilled reader would, upon reading the application, believe, for example, that a polymer other than EVA would be suitable for making bollards - that was, he submitted, implicitly disclosed. That submission is wrong. The section is concerned with what is disclosed, not with that which the skilled reader might think could be substituted or had been omitted."

The parties agreed on this point and I take from it that the correct construction of the specification is that of the skilled reader who interprets its teaching in the light of his common general knowledge of the art. He does not, however, include substitutions or additions that he might believe give a better result, or replace surprising or odd features of the disclosure.

17 I was also referred to *Spring Form Inc and another v Playhut Inc* [2000] FSR 327. Mr Howick made a similar point to his first in relation to *Flexible Direction Indicators* in referring me to a passage on page 339 in which Laddie J said:

"These considerations do not mean that an inventor is given a free hand to widen out his claims at will. It may well be that if he goes too far he will take his claimed monopoly beyond the concept he has invented. If so, insufficiency may result."

Mr Howick said this would be helpful in pointing the way to approach the present case. I accept that broadening a claim so that it is no longer properly supported by the description may result in the broader claim thereby extending the disclosure. There are

precedents where this has been found to be the case. However as I said above, such a determination needs to be made on the facts of each case. As Laddie J went on to say in the same paragraph;

“It is not sufficient to say, as Playhut does, that mere changes in scope of claim amount to added matter.”

Consequently, as I have already said, I will assess the present case on its facts and take into account any relevant points the parties make in relation to support.

18 Mr Hacon referred to a later passage on the same page of the *Spring Form* decision in which Laddie J said:

“With this guidance in mind I can turn to the two allegations pleaded. The first is the feature, referred to in claim 1 of the application, that the hinges are located at the top left and right of each frame. No such limitation is to be found in the claims of the granted patent. So, within the latter are embodiments in which hinges are located elsewhere. But, as Aldous J pointed out, not everything within a claim is disclosed. There is nothing in the granted patent which discloses the precise location of the hinge means. The claims do not *disclose* hinges located elsewhere. So this objection falls at the first hurdle.”

The point here is once again that mere broadening of a claim to include arrangements not included in the claim as it was initially filed, does not necessarily add subject matter.

19 In summary, the appropriate approach to the question of added subject matter is that set out in the *Bonzel* case. This requires me to ascertain through the eyes of the skilled addressee what is disclosed, both explicitly and implicitly in the application; secondly to do the same in respect of the patent as granted; and finally to compare the two disclosures and decide whether any subject matter relevant to the invention has been added whether by deletion or addition. In assessing disclosure, the description and the claims need to be considered together. The assessment should include what is implicit in the specification when interpreted by the skilled addressee but should not include substitutions or additions that occur to him. Finally, while an investigation into support in relation to a broadened claim may sometimes be of assistance, such an assessment should be on the facts of the case.

### **Statements of Case and Evidence**

20 The claimant’s Statement of 23 October 2002 was accompanied by a copy of the decision of the EPO Technical Board of Appeal number T0635/98 dated 7 September 1999. This relates to an appeal from a decision of the EPO Opposition Division of 9 June 1998 revoking European Patent number EP 0098070. This is the equivalent European patent to the patent in suit, both being based on the same priority application. Also accompanying the Statement were copies of the European Patent, firstly as published in its “as filed” state, with number EP 0098070 A2, then as granted before opposition, number EP 0098070 B1 and finally as granted following opposition and appeal hearings before the EPO, with number EP 0098070 B2. The proprietor’s Counterstatement followed on 23 January 2003.

- 21 The claimant's evidence comprises a witness statement of Dr Gert Lück who is a patent attorney with the claimant, ABB Switzerland Holding Limited. Dr Lück's witness statement assesses the disclosure of the patent in suit and draws attention to parallel actions relating to equivalent patents or applications in the European Patent Office and in the Korean Supreme Court. Exhibited to Dr Lück's witness statement are: (A) a copy of another related decision of the EPO Technical Board of Appeal T0319/91 of 8 December 1992 in an appeal against the revocation of the equivalent European Patent by the EPO Opposition Division on 12 March 1991; (B) a copy of the specification of the equivalent European application to support Dr Lück's assertion that it has the same wording as the specification filed in the GB application; (C) one page from a still further related EPO decision, T609/94, setting out the points definitively decided by the EPO in its decision T0319/91. Also exhibited are copies of three decisions of the Korean Supreme Court in corresponding Korean patents or applications, relating to the workability of "Example 4" of the present specification.
- 22 The proprietor's evidence comprises a witness statement of Dr Anthony Cyril Lowe, a consultant who assesses the disclosure of the patent in suit. Dr Lowe's CV is attached as Exhibit 1. The proprietor has also filed a witness statement of Samuel John Knight, a patent attorney for QinetiQ, drawing attention to a number of re-examination actions on the equivalent US patent number US 4596446. He exhibits a copy of the patent document for US 4596446, two re-examination certificates, and a copy of the file wrapper relating to the second re-examination.
- 23 The claimant has filed a second witness statement of Dr Gert Lück in reply to the proprietor's evidence.

#### **Admissibility of Evidence**

- 24 I need to deal with admissibility of the different pieces of evidence before me.
- 25 The evidence of Dr Lück and Dr Lowe is put forward in the way of expert evidence. Dr Lowe is an independent consultant with a great deal of research experience and direct involvement with the technical aspects of liquid crystal and other display systems over the years before (and since) the priority date of the invention. He sets out his understanding of his duty as an expert witness, which he says is to give his technical opinion of the patent specification and to do his best to assist the Patent Office in an accurate understanding of the technical matters in dispute. Mr Howick accepted that the discussion in paragraphs 14 to 30 of Dr Lowe's evidence fairly represented part of the common general knowledge of a person skilled in the relevant art in 1982. I accept that Dr Lowe has the appropriate knowledge and background to act as an expert witness in this case and may indeed be an approximation to the skilled addressee in relation to the subject matter of the patent. Dr Lowe's evidence is not to be taken uncritically but carries the weight that his experience and expertise support.
- 26 Dr Lück uses his witness statement to put forward what appears to me to amount to submission and argument rather than expert evidence. Dr Lück also expresses, in his witness statement, his opinion on the meaning to be attached to certain passages of the specification. For example in paragraph 4, he analyses parts of the specification and

concludes: “Thus, the passage on page 4 lines 8 and 9 of the Specification is strictly connected with a device that incorporates an amount of pleochroic dye in the liquid crystal material.” Similar treatment is given to other parts of the description in paragraphs 5 and 6. Mr Hacon objected that Dr Lück did not qualify to give expert evidence. He said Dr Lück is not independent since he is employed by the claimant. Nor is he someone who has first hand knowledge of the technology. As a patent agent, he works at one remove, primarily on legal aspects rather than on the technology itself. He consequently does not have the same perspective or background as a technical expert. Thirdly, Mr Hacon said his evidence puts forward arguments designed to assist the claimant rather than an objective assessment of the specification to help with the determination of the skilled addressee’s understanding of the technology. Finally, Dr Lück does not state, as he ought if his evidence is to be given full weight, that he understands his duty as an expert witness to assist this tribunal. Mr Hacon’s view was that Dr Lück’s evidence should therefore be given no credence at all.

- 27 I agree with Mr Hacon’s points as to Dr Lück’s suitability as an expert witness. Mr Howick also accepted that Dr Lück was not an independent witness and that his statement consisted largely of argument and submissions. Dr Lück’s arguments can be taken as such at face value, but in view of the facts that he is not independent, does not have the proper credentials as a person with skills in the technology and suffers from the other deficiencies that Mr Hacon described, Dr Lück’s witness statement as to technical matters can be given very little weight.
- 28 There is another point I need to bear in mind in reviewing the expert evidence. A suitable expert witness can provide assistance to the Courts or the Patent Office about the meaning of technical terms and the interpretation from a technical viewpoint that would be made by the skilled addressee, but it is for the tribunal to decide on the construction of the specification and the claims. Some of Dr Lück’s evidence relates to opinion as to the meaning of the specification and I shall also disregard it to the extent that it does so.
- 29 Exhibited to Dr Lück’s witness statement are further documents consisting of copies of EPO and Korean decisions on the equivalent cases in those jurisdictions. Following the introduction of the EPO and Korean decisions, the proprietor introduced papers relating to US re-examinations in the witness statement of Samuel John Knight, intended as he says, to give me “the benefit of other decisions on related patents”. I asked Mr Howick what his intention was in putting forward the EPO and Korean decisions as evidence since, while it seems to me unobjectionable to hear submissions on points of law raised in previous relevant cases, I have reservations as to whether it would be proper for me to allow submissions to be made on the facts of a prior case or entertain an invitation to follow the prior decision and make the equivalent finding. I asked Mr Howick and Mr Hacon to address me on that issue.
- 30 Mr Howick said I should consider the facts that had been put before the EPO Board of Appeal, since it illuminated assessment of the skilled person’s approach to the specification and the Board’s analysis of those matters. He also argued that the Korean decision referred to experiments to assess the workability of “Example 4” and that this would offer me guidance. He did not say that he intended to draw any new points of law from the EPO or Korean decisions. Mr Hacon said that insofar as a decision of the



EPO Board of Appeal set down a principle of law, a hearing officer was entitled to look at it. However the decision of the Board in the parallel case was reached on the submissions, arguments and evidence before them, which are not available to me. It was not appropriate to follow the other decision; on the contrary, a hearing officer has an obligation to take an independent view of the evidence and submissions before him on the day. It would be wrong to admit the evidence relating to the prior case (absent any guidance to be derived on a point of law). It would not help and it could only create bias.

31 After carefully considering both sides' submissions at the hearing, I gave a reasoned oral decision to the following effect:

- To the extent the EPO decisions are concerned with the facts of the parallel cases to this one, heard before the EPO, it would be wrong for me to consider them. I came to that view principally because the submissions that were put to the EPO Board of Appeal and the evidence that it had before it, may not have been the same as are before me. If I were to take them into account, it would create an obvious prejudice in my coming to a view on the facts and submissions put before me.
- As Mr Howick has read the Board of Appeal decision, it was open to him to put *de novo* to me arguments that were put to the EPO Board of Appeal. There was no danger in my mind of an argument which may have been put to the Board of Appeal being ruled out here, because he could present it himself.
- Turning to how the Board may have applied general legal principles to its analysis, again on the assumption which Mr Howick confirmed, that he had put his view of the law to me, I did not think there was anything to be gained from looking at the parallel cases with a view to distilling legal principles, as it would not add anything to what he had submitted. Once again, looking at the Board of Appeal's judgment would risk potential prejudice.
- On that basis, I decided not to entertain submissions based on the Board of Appeal's judgment on the parallel patent nor look at the exhibits which go to that. That dealt with the EPO decisions. It seemed to me that similar principles apply to events in the jurisdictions of Korea and the United States and I put those exhibits to one side too. It is right that I focus on the submissions that the parties make here.

### **The Specification as Filed**

32 My first task under the *Bonzel* approach is to ascertain what the specification as filed discloses through the eyes of the skilled addressee. I briefly outlined the content of the specification above and I shall now consider in more detail the disclosure as originally filed and published in the "A" document. After a discussion of the prior art indicating some particulars of prior arrangements, the specification states: "It has now been found that certain cholesteric liquid crystal cells incorporating a pleochroic dye and having about a  $3p/2$  twist exhibit a sharp transmission-voltage characteristic for rapidly increasing voltages without hysteresis." It appears at this point that the specification is

concerned only with liquid crystal devices incorporating a pleochroic dye. The statement of invention follows which also requires a dye component, and which corresponds to claim 1. Further passages follow, describing variations on the basic idea, among them a reference on page 1 lines 105 to 107 to the use of such cells with polarisers, that I shall come to later. These passages put no particular emphasis on the use of dye. The description then moves on to the particular embodiments which are described with reference to the figures.

33 The particular description sets out details of various embodiments, again without a great deal of reference to the use of dye. Where dye is mentioned however, it tends to reinforce the impression that the specification is concerned with types which do use dye. For example at page 2, lines 95 to 100, the specification discusses multiplexed addressing of arrays. This is an issue of importance covered in detail in the specification, since a useful increase in multiplexing capability is dependent on the improved switching speed with which the invention is concerned. It is explained that the invention allows dye type constructions to switch state as rapidly as non-dye types. Lines 40 to 68 on page 3, which describe the sharp transition-voltage characteristic of the invention, also specifically relate to a type using dye.

34 It is only when one arrives at the particular embodiment in lines 92 to 95 on page 3 that there is an unequivocal disclosure of an arrangement which does not use dye. I shall refer to this as the “non-dye” embodiment. This passage reads:

“For high birefringence materials and layers of  $12\mu\text{m}$  or more a polarisation switch effect (c.f. the  $p/2$  twisted nematic) is obtainable without a dye by using the cell between two polarisers.”

The expression “high birefringence” is defined in the preceding paragraph as relating to materials with  $\Delta n/0.15$ . I understand that the symbol  $\Delta n$  refers to the difference in refractive indices exhibited by a birefringent material when light passes in different directions through its crystal structure. The skilled reader would appreciate that in the specification as originally filed and published, this embodiment would lie outside the scope of claim 1.

35 Further particular description follows and then ten specific examples of display cell constructions setting out in each case the proposed cell thickness, whether the arrangement uses high tilt or low tilt alignment, the materials used for the liquid crystal material, the on/off switching voltages at room temperature and the maximum number of multiplex lines such a cell could support. All of the examples except Example 4 include a dye component. The proprietor says Example 4 provides another instance of disclosure of a device which does not use dye, but the claimant says that the example is fatally flawed because it also omits details of any cholesteric additive, which both sides agreed was essential. The proper interpretation of this passage is therefore not immediately clear.

36 The specification as filed therefore describes primarily display arrangements using a dye component and it claims only arrangements using dye. There is an unambiguous disclosure of a particular arrangement which does not use dye and which therefore lies outside the scope of the claims. There may be further disclosures of non-dye types, but

the parties do not agree about that. They also dispute whether the non-dye embodiment simply discloses what it appears to disclose, or whether the skilled addressee would understand that it implied a more general possibility of non-dye types whose parameters were not strictly limited to those set out in the embodiment. Before continuing I consequently need to assess these matters.

- 37 Mr Hacon highlighted the passage relating to the use of the cell with polarisers which I mentioned above. Lines 105 to 107 on page 1 state: “The device may operate in a transmissive mode or with a reflector in a reflective mode both with or without neutral or coloured polarisers.” Mr Hacon drew my attention to Dr Lowe’s evidence which demonstrated that, as part of the common general knowledge, the skilled person would have been aware of two ways of making a practical cell. Either one polariser could be used and the cell would incorporate a dye as an additive in the liquid crystal material, or as an alternative, two polarisers could be used in sequence in the light path. Two polarisers would never be used together with a dye. He said the passage described cells with two polarisers and that the skilled person, armed with this knowledge would know that meant a cell without dye.
- 38 Mr Howick accepted that the skilled person would equate two polarisers with the absence of dye, but did not agree that the passage described cells with two polarisers. My own view simply as a matter of interpreting the language used, is that the passage does not clearly disclose a cell with two polarisers. The passage refers to different types of device collectively and it seems likely in my view that the use of “polarisers” in the plural relates to the plurality of devices covered by the discussion rather than single devices with twin polarisers. It may possibly relate to twin polarisers but I would not go so far as to say that it probably does. Consequently, I do not believe that it can constitute a disclosure of a cell with two polarisers.
- 39 Mr Howick said the non-dye embodiment set out in lines 92 to 95 on page 3 disclosed a cell without dye which should be construed to be strictly limited to the parameters set out. Such a cell must have a thickness of  $12\mu\text{m}$  or more he said, and operate with high birefringence materials, that is with  $n/0.15$ . Dr Lowe says that the parameters are more in the way of a suggestion; the skilled reader would understand that high birefringence and a reasonable thickness of cell layer would be needed to rotate the plane of polarisation adequately in a device without dye. However the skilled reader would have been aware of the existence of non-dye cells at the time that worked with parameters lower than those given. They would know there would not be a cut off at the figures given but that the switching effect would continue to operate as they were reduced, albeit with ever lower contrast between the on and off states until at a certain low level, the effect would be lost altogether. He said the ranges given would just be taken as suggestive or exemplary by the skilled reader.
- 40 I think that must be true. I accept Dr Lowe’s evidence that the skilled reader would know that there would not be a sudden cut off. That is reinforced by the limit given for high birefringence which is, using words instead of symbols; “greater than or approximately equal to 0.15” and therefore sets an approximate region in which the effect will occur. I think the skilled person would also understand that approximate values were intended for thickness since other variations set out on page 3 give ranges for cell thickness divided by cholesteric pitch ( $d/p$ ), such as 0.5 to 1.0 and 0.5 to 0.75,

suggesting the author is not concerned with precise limits but approximate ranges. In addition, as Dr Lowe said, the skilled person is armed with the knowledge of the generality of liquid crystal displays both with and without dye, and on being told about one device without dye would know that it was a general effect that was being described. The disclosure of a specific configuration which does not use dye will immediately make the skilled reader aware that non-dye arrangements are a possibility as a general proposition. They would appreciate that something was amiss about the drafting of the specification since the claim specifies the use of dye, and would be uncertain as to the extent of the effect, but they would not, I think, be in any doubt that non-dye arrangements were possible since the non-dye embodiment is unequivocal. I believe as a result, in the light of Dr Lowe's evidence, that the skilled reader would understand that the apparent restriction in the scope of the invention implied by the limitation in claim 1 to dye types, must be disregarded as far as the technical understanding of the invention was concerned. I consider that this amounts to an implicit disclosure of the general principle that devices according to the invention would operate without a dye component.

- 41 Another issue raised in relation to the non-dye embodiment was that it explains that the device operates through the "polarisation switch effect" and then refers the reader to an earlier part of the description with the remark "(c.f. the p/2 twisted nematic)". The parties agreed this refers to the passage on page 2 lines 94 to 98 which reads:

"Present displays using the twisted nematic or Schadt Helfrich effect without dyes can be multiplexed about 32 ways (n=32). However dyed displays have previously been limited to around n=3."

The reference may also conceivably be to the discussion of the prior art twisted nematic device in lines 25 to 39 on page 1. The parties made different points about the implication this reference has for the thickness of the non-dye device of the embodiment. Their arguments were based on the appearance, in a table produced by Mr Howick accompanying his skeleton argument, of a statement that the twisted nematic or Schadt Helfrich devices have a thickness of 4 - 8µm. I am unable to find any disclosure of such a range of dimensions for these devices in the specification or in the evidence. Mr Howick and Mr Hacon may be aware of the dimensions of a typical Schadt Helfrich device, but there is nothing before me to confirm this and I am consequently unable to draw any inference from the arguments in relation to this point.

- 42 Moving on to the discussion of Example 4, all of the other nine examples specify the use of between 0.7% and 1.5% by weight of cholesteric additive "CB 15" and 1% by weight of the dye "D82". Both sides agree that the skilled person would appreciate something was wrong with Example 4. They say it would not be possible to achieve the necessary helical twist without the additive. However they differ on what the skilled addressee would make of it. Mr Howick says they would infer that the example is unworkable, or that both cholesteric additive and dye would need to be added for the error to be made good. Dr Lowe says that the skilled person would appreciate that the cholesteric additive was missing but would not find any problem with the omission of a dye component. He says this arrangement would be taken as an example of a non-dye configuration: the skilled person would not be dissuaded by the reference to an 8µm layer thickness, but would just assume the 12µm limit indicated in the

embodiment was only suggestive, and that a device with 8 $\mu$ m thickness would work adequately.

- 43 While I have due regard for Dr Lowe's expertise, I think this is a matter of construction of the specification as much as expert interpretation. It strikes me that it would be something of a coincidence if the one example out of ten in which the cholesteric additive was omitted in error should also be the only one dealing with a non-dye configuration. While I have found that the presence of the non-dye embodiment implicitly discloses the generality of non-dye arrangements, I nevertheless find it unlikely that the 8 $\mu$ m thickness for Example 4 would result from a casual and unexplained mismatch between the 12 $\mu$ m thickness in the non-dye embodiment and this example. I think Example 4 is more easily explained as the error that caused the cholesteric additive to be omitted also causing the dye component to be omitted. And the reason the example gives an 8 $\mu$ m layer thickness is more probably in my view that it is intended to be another example of the 6 $\mu$ m and 8 $\mu$ m devices incorporating dye. There is not a lot to go on, and I do not think this is by any means an overwhelming conclusion, but I think it more likely on the balance of probability that Example 4 arises from an error than that it is a non-dye example. There is a further point. Mr Hacon saw a sort of cumulative effect between the two previous disclosures relating to non-dye devices that he argued for. He thought they would reinforce one another and support the conclusion that Example 4 also related to a non-dye type. I found that the first passage did not disclose non-dye configurations, and since my initial analysis of the Example 4 disclosure suggests that it is not a disclosure of a non-dye device, I do not consider there is any cumulative effect. In the result, I think Example 4 arises from an error and does not disclose an example of a device without a dye component.
- 44 Having considered the parties' submissions on the disclosure of the original specification, I find that it deals with liquid crystal devices using a long pitch cholesteric mixture in which the molecules naturally adopt a helical structure with the helix axes normal to the plane of the layer. It is concerned with improving switching rates over what was previously available in the prior art. It describes primarily arrangements which use a pleochroic dye but there is a clear description of a non-dye embodiment and I agree with Dr Lowe that the skilled addressee would perceive that the switching effect without dye was not strictly limited to the parameters specified. I also consider that the specification provides an implicit disclosure that devices using two polarisers instead of dye would also operate according to the invention in a general sense not strictly limited to the parameters given in the single non-dye embodiment.

### **The Specification as Amended for Grant**

- 45 The *Bonzel* approach requires me to assess the disclosure of the specification as amended and compare the disclosures before and after amendment to assess whether any new subject matter has been added. These two steps can conveniently be combined. Claim 1 in the patent as granted now encompasses a wider area of subject matter so that it is no longer limited to constructions using dye. Instead of the limitation to dye, it now requires means to absorb transmitted light. It therefore covers a range of liquid crystal types not disclosed or claimed in the original patent. But it does not, in my view, disclose anything that was not already disclosed in the application as filed. The precedent case law emphasises that not everything that is

claimed is disclosed and I can find nothing in the new wording of claim 1 that has any effect other than to broaden the feature of use of a dye (to absorb light in view of what we are told in the description) to the use of any means to absorb light. By saying that “any means” can be used, the proprietor has not *disclosed* any of the other means that are now covered by the claim. I observe that all claims, apart from omnibus claims, cover arrangements that are not disclosed. The claim as amended covers a different range of devices from the original claim, but that does not mean it discloses them, any more than the original claim discloses the different devices within its scope that are not specifically set out in the description. I find on the face of the words now used in the claim that the broadening amendment to claim 1 does not extend the matter disclosed.

- 46 That is not quite the last word however. Mr Howick made the general submissions I mention above that it would be useful to inquire into the issue of support for the claim as amended, in order to assess whether the amendment extends the matter disclosed. As I say above, I think this is an assessment that needs to be made on the facts of the case. Mr Howick put forward no specific arguments relating to support as I understood his submissions, beyond the proposition implied by his arguments that broadening of the claim to cover arrangements not covered by the original claim necessarily resulted or were likely to result in a claim that was unsupported by the description. That broad proposition is not consistent with the remarks of the learned judges in the *A.C. Edwards* and *Spring Form* cases that I quoted above. If I am to make my own assessment, it is that the broadening amendment is a reasonable one which extends the scope of claim 1 by the appropriate amount and in the appropriate direction to include the non-dye embodiment within its scope. It does not in my view involve an unjustified broadening into areas of technology not envisaged in the original specification. I do not find that the amendment results in a claim that is unsupported by the description or fails to set out some essential aspect or feature of the invention as originally disclosed.
- 47 Since the broadening amendment does not of itself extend the matter disclosed, and there is nothing from the consideration of lack of support to suggest it does so, I consequently find that the amendment made to claim 1 does not extend the matter disclosed in the patent beyond that in the application.
- 48 Claim 2 claims the use of pleochroic dye as the means for selectively absorbing transmitted light. This did not give Mr Howick any difficulty and I observe that this claim is effectively of the same scope as the original claim 1. I consequently find that claim 2 also does not extend the matter disclosed in the patent beyond that in the application.
- 49 Mr Howick made submissions in relation to claim 3. He addressed them in fact to the new paragraph at the foot of page 3 of the granted patent specification, which appears after the statement of invention and reflects the wording of claims 2 and 3. However I think the argument applies equally to claim 3. He said that the paragraph at the foot of page 3 introduced added subject matter in its own right. It reads: “The means for selectively absorbing transmitted light may be either an amount of pleochroic dye incorporated in the liquid crystal material or two polarisers either side [of] the cell.” Mr Howick argued that this amounted to a new disclosure of the liquid crystal device having the limits set out in the original claim 1 for twist, thickness and pitch, and

having the full range of cell thicknesses between 0 and 20µm but now with two polarisers instead of dye.

- 50 I take issue with one point. Mr Howick referred to a range of thicknesses between 0 and 20µm but the claim says “less than 20µm”. There is a difference in disclosure between these two statements, the first draws equal attention to the whole range from 0 to 20µm and the latter sets an upper limit of 20µm and allows the skilled reader to supply their own lower limit. Making due allowance for that, Mr Howick has a point. In this case, it is not possible to say as for claim 1 that the amendment results in a broader claim which covers new arrangements but does not disclose them. By contrast, in claim 3 and the corresponding passage in the description, the arrangement of twin polarisers and the features set out in claim 1 which were previously features of separate embodiments are now explicitly associated with one another.
- 51 I have found that there was an implicit disclosure in the original specification of the general principle of the use of polarisers instead of dye to the types of liquid crystal displays with which the specification is concerned. I consider equally, and I think it is really saying the same thing, that the non-dye/two polariser arrangement would have been understood by the skilled addressee to be applicable generally across the range of possibilities described in the specification and as set out in claim 1. Consequently I find that claim 3, and the corresponding passage on page 3 of the patent specification, do not constitute an extension of the matter disclosed.
- 52 Mr Hacon raised the question whether this latter argument, which was advanced by Mr Howick only at the hearing, was properly based on the pleadings. In paragraph 2 of its Statement, the claimant alleged that,

“the matter disclosed in the specification of the patent extends beyond that disclosed in the application as filed because the wording: “and incorporating an amount of pleochroic dye” was in claim 1 of the application as filed, and in the corresponding statement of invention, but omitted from the wording of claim 1 as granted in the patent”.

Mr Hacon said that there was no pleading that the paragraph on page 3 would also be relied on as an instance of added subject matter in the proceedings. He said he had only appeared with the purpose of defending the ground that was pleaded and that there would have been other evidence and considerations if the proprietors had been aware of the further ground. Mr Howick said the claimant’s Statement contained as a general basis for the application for revocation, that the matter disclosed in the patent specification extends beyond that disclosed in the application as filed. However, Mr Hacon pointed out that the ground was in fact limited by the word “because” in the passage I have quoted above. Since I have not found against Mr Hacon on this issue I do not consider that I need to make a definitive finding on the pleadings point and I consequently leave it there.

## **Conclusion**

- 53 In summary I find that the claimant has not made out its case that the specification as amended discloses matter extending beyond that in the application as filed, and in consequence I decline to order revocation of the patent.

### **Costs**

- 54 I invited the parties to address me on costs and in doing so neither side saw any reason to depart from the comptroller's standard scale. This scale reflects the principle that costs awarded in actions before the comptroller represent only a contribution to the costs incurred. The claimant, ABB Switzerland Holding Ltd, has failed in their revocation application and I therefore order it to pay the proprietor of the patent, QinetiQ Limited, the sum of £1750 as a contribution to its costs.

### **Appeal**

- 55 Any appeal must be lodged within 28 days of the date of this decision.

**S N DENNEHEY**

Divisional Director acting for the Comptroller