***Saertex France v. Hexcel Reinforcements*: "Free Beer" Claims**

Today in *Saertex France SAS v. Hexcel Reinforcements UK Ltd.,* [2016] EWHC 966 (IPEC)(Hacon, J.), in the course of reaching an invalidity ruling, the trial judge pointed to what he obviously construes as problematic language in the patent specification due to a poor translation (¶ 3); and the provision of information by the parties *vel non* (¶ 40).

"Free Beer" Claims: Citing Lord Hoffmann in *Lundbeck A/S v Generics (UK) Ltd,* [2008] EWCA Civ 311; [2008] R.P.C. 19, at [61], the trial judge considers whether the claims are "free beer" claims where the patentee merely claims a desirable end result and thus encompasses all solutions to that result (¶ 47).

The attached pdf version of this note is yellow highlight marked to emphasize the cited paragraphs of the opinion.

Regards,
Hal

Neutral Citation Number: [2016] EWHC 966 (IPEC)

Case No: IP-2014-000056

IN THE HIGH COURT OF JUSTICE
CHANCERY DIVISION
INTELLECTUAL PROPERTY ENTERPRISE COURT

Royal Courts of Justice
Strand, London, WC2A 2LL

Date: 04/05/2016

Before :

HIS HONOUR JUDGE HACON

- -

Between :

SAERTEX FRANCE SAS	**Claimant**
- and -	
HEXCEL REINFORCEMENTS UK LIMITED (formerly FORMAX (UK) LIMITED)	**Defendant**

- -
- -

Chris Aikens (instructed by **Appleyard Lees IP LLP**) for the **Claimant**
Henry Ward (instructed by **Gowling WLG (UK) LLP**) for the **Defendant**

Hearing dates: 22-23 March 2016

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Approved Judgment

I direct that pursuant to CPR PD 39A para 6.1 no official shorthand note shall be taken of this Judgment and that copies of this version as handed down may be treated as authentic.

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HIS HONOUR JUDGE HACON

Judge Hacon :

Introduction

1. The claimant ("Saertex") is the proprietor of European Patent (UK) No. 1 781 455 B1 ("the Patent") which claims an invention entitled 'Method for making a reinforcement provided with at least one adhesive surface capable of being repositioned and resulting reinforcement'. Saertex alleges that the Patent has been infringed by the defendant ("Hexcel"). Hexcel has counterclaimed for a declaration that the Patent is invalid.

2. In response Saertex has made a conditional application to amend the Patent: if claims 1 and 2 are found to be invalid, Saertex advances alternative claims. Hexcel has not opposed the application to amend and the upshot was that there were four claims in issue: claims 1 and 2 as granted and claims 1 and 5 as conditionally proposed to be amended.

The Patent

3. The Patent is in French and there is a translation. It is not a model of the translator's art, though the underlying French specification seems not to be as clear as it might be. The parties and the court have made the best of the translation.

4. The Patent is concerned with a method of manufacture of fibre-based 'reinforcements'. There is a final product claim to the fibre-based reinforcement itself, but all the claims in issue are claims to processes for making such a product.

5. In the title of the invention as it appears in English on the front page of the Patent, the product made by the invention claimed is referred to as 'a reinforcement'. The title in French uses the word *armature*. In the English translation of the specification 'armature' and 'reinforcement', and even 'armature reinforcement' seem to be used interchangeably. I will stick with 'reinforcement' as the parties mostly did, although on one view armature – in the sense of a framework (in both English and French) – is more appropriate. The invention is concerned with a fibre-based material intended for embedding in another material, typically resin, to create a strong composite material. The fibre-based material is thus a framework and also a reinforcement in that it will reinforce the resin (or other surrounding matrix).

6. Composites made this way have very wide application. The Patent mentions sports accessories and vehicle components, although the examples referred to at trial were largely for the manufacture of yachts and other marine craft. The expert witnesses were both engineers with a maritime background.

7. Paragraphs [0003] to [0017] describe a known method of making composites to illustrate the nature and advantage of the invention claimed. This consists of placing a fibre-based material, such as glass fibre, in a mould. Resin is injected, which permeates the fibres. The problem with the known method was how to position the fibre-based material correctly in the mould, particularly where the mould is small and/or of complex shape. A known solution was to use aerosol adhesives, but such adhesives are said to take a long time before they provide adequate adherence.

Significantly the specification states that adherence is permanent so that the fibre-based material cannot be repositioned in the mould if it is not stuck in the right place. Use of such aerosols is also governed by safety legislation which gives rise to expensive restrictions on how they can be used.

8. The object of the invention as described in paragraph [0018] is to allow precise positioning of the fibre-based material, to permit the material to be repositioned if necessary before the resin is added and to keep costs down. Paragraph [0018] refers to the invention as being "a process for the production of a fibre-based armature" but it could be better described as a process of treating the surface of a fibre-based material.

9. The method as described at [0021] and thereafter is to deposit a 'repositionable' adhesive on at least one surface of the fibre-based material. A 'removable insert', typically made of paper, is placed on top of that. Although there is no limit on the shape of this three-layer construct, paragraph [0022] describes it as a 'sheet' which can be stacked (apparently one sheet on top of another) or rolled up. The sheets of Hexcel's product I was shown were no more than 2-3 millimetres thick uncompressed.

10. The operator cuts off a piece of the three-layer construct, by implication of suitable size and shape to fit the mould – at [0032] the specification speaks of it being prepared "as a function of the geometry". The paper (or other) insert is removed and the fibre-based material is positioned and then stuck within the mould by means of the exposed adhesive layer. Because the adhesive is repositionable there will be a period of time in which the construct can be repositioned before the adhesive hardens. Then the resin is added, with the fibre-based material now securely in the correct place.

11. A particular use of the composite material thus made is described in [0035] to [0038] and variations on the invention are explained at [0039] to [0042].

The claims

12. The claims in issue are the following:

Claim 1 as granted

(i) A method of manufacturing a fibre-based armature intended to be embedded in a matrix or a mixture of matrices, characterised in that it comprises performing the following steps

(ii) preparing a fibre-based material, and

(iii) depositing a repositionable adhesive on at least one of the surfaces of the material thus obtained.

This is broader than the method summarised at paragraph [0021] of the specification, there being no mention of a removable insert being placed on the adhesive. The insert appears in claim 2.

Claim 2 as granted

(i) A method of manufacturing a fibre-based armature according to claim 1,

(ii) characterised in that it comprises a supplementary step that comprises pressing a removable insert on the face that received said layer of repositionable adhesive.

Claim 1 as conditionally proposed to be amended

This claim adds to claim 2 as granted the requirement that the adhesive is present only on the surface of the fibre-based material (integer (iv)). The fibre-based material is now stated to be "a fibre-based reinforcement material" (see integer (ii)) but it was not suggested by either side that this made any difference.

(i) A method of manufacturing a fibre-based armature intended to be embedded in a matrix or a mixture of matrices characterised in that it comprises performing the following steps

(ii) preparing a fibre-based reinforcement material,

(iii) depositing a layer of repositionable adhesive on at least one of the surfaces of the reinforcement material thus obtained

(iv) wherein the adhesive is present only on the surface, and

(v) pressing a removable insert on the face that received said layer of repositionable adhesive.

Claim 5 as conditionally proposed to be amended

The use of a hot-melt glue as the adhesive is added as a further feature (ii):

(i) A method of manufacturing a fibre-based armature according to any one of the preceding claims,

(ii) characterised in that the adhesive is chosen from hot-melt glues.

13. As I have already indicated, the reinforcement and the armature are the same thing: a fibre-based material. Paragraph [0021] says:

> "[0021] The process consists in preparing a fibre-based armature, in depositing on at least one of the surfaces of the armature thus obtained a repositionable adhesive, and in pressing a removable insert on the face that received said layer of repositionable adhesive."

14. Although this paragraphs speaks of preparing a fibre-based armature (as do the claims), the specification says nothing about how to make a fibre-based material. 'Preparing' seems to mean nothing more than obtaining. The so-called method of manufacture of a reinforcement or armature is in reality a method for treating the reinforcement to create what I will call a 'treated reinforcement' so that the reinforcement is more easily used in the manufacture of a composite material. This has relevance among other things to the identification of the skilled person. Unfortunately I have had to coin the term 'treated reinforcement', for want of a better

one, because no consistent name was given in the evidence or submissions to that key category of items. There was quite often a blurring between on the one hand what I have called treated reinforcements, and on the one hand either reinforcements or composites. In this judgment 'reinforcement', 'treated reinforcement' and 'composite' are to be distinguished from one another and given the separate meanings allotted above. In the context of claim 1 as granted, a treated reinforcement should be taken to include a fibre-based material with adhesive applied to it.

The skilled person

The law

15. For the purpose of construing the claims of a patent, the skilled person will always be someone who is likely to have a practical interest in the subject matter of the invention. This is the classic formulation of Lord Diplock taken from *Catnic Components Ltd v Hill & Smith Ltd* [1982] R.P.C. 183, at 242. The skilled person is assumed to have read the patent with his common general knowledge in mind and to interpret the claims on that basis, see for example *Schlumberger Holdings Limited v Electromagnetic Geoservices AS* [2010] EWCA Civ 819; [2010] R.P.C. 33, at [38]. Frequently the subject matter of the patent extends across more than one technical discipline so there will be a team of two or more skilled persons each with different skills, see *Schlumberger* at [33].

16. In *Schlumberger* Jacob LJ pointed out (at [40]) that in nearly all cases the skilled person or team will be the same for all purposes, that is to say construction and the assessment of novelty, obviousness and insufficiency, though of course in relation to obviousness the skilled person will not have read the patent. However, the facts in *Schlumberger* were such that the skilled team for the assessing obviousness was different from the construction skilled team with the classic *Catnic* characteristics.

The evolution of the skilled person in this case

17. At the case management conference I asked the parties to define the technical field from which the skilled person and therefore the experts should come. This was to flush out any *Schlumberger* issue on different types of skilled person and the possibility that the parties did not agree about it, see *Environmental Health Systems Ltd v Synergy Health plc* [2014] EWHC 1306 (IPEC); [2015] F.S.R. 6, at [12]-[28]. The parties agreed that the skilled person would be a manufacturer of reinforced plastic products, i.e. composites, and I therefore ordered that each could provide evidence from one expert in that field. They did. Saertex's expert, Mr Godfrey, was a retired composites engineer. Dr Searle, who gave expert evidence for Hexcel, also had a background in the manufacture of composites.

18. This notwithstanding, by the time of trial both parties in their skeleton arguments said that the skilled person would in fact be a skilled team, comprising first a manufacturer of treated reinforcements and secondly a manufacturer of composites. (At this point, following Mr Godfrey, the skeletons used the term 'fibre reinforcement materials' for treated reinforcements, although that is not what a closely similar term seems to mean in claim 1 as conditionally proposed to be amended). Dr Searle, in his second report, said that the team should also include a third person, one who specified and procured component materials used to make the treated reinforcements. Mr Aikens, who

appeared for Saertex, submitted that this last addition raised difficulties of the type explored in *Schlumberger* and that I should resist a growing membership of the skilled team.

19. During the trial I did not have in mind the order made at the CMC on experts and thus did not notice the inconsistency between what the parties had said at the CMC and their modified views of who the skilled person, now a team, should be.

20. Having heard the evidence and submissions at trial, in my view a skilled team is neither needed nor appropriate, although this is not because of anything arising out of *Schlumberger*. When Lord Diplock referred to "those likely to have a practical interest in the subject matter of the invention" I do not believe he intended to cast the net wide to include anyone at all with a likely practical interest. An invention concerned with a method of making a product would of course be of practical interest to manufacturers of such products. Depending on the nature and complexity of the invention a team of skilled persons drawn from different areas of expertise may be required to make up the skilled team. Yet even though the invention might well be of keen practical interest to those who use the product made according to the claimed method to manufacture something else, this does not mean that persons skilled in using the product must join the team. On that basis, one might just as well add interested component suppliers to the team. The "practical interest in the subject matter of the invention" refers, in my view, to an interest which is held by the putative skilled person in *directly* performing the invention as claimed – either by himself or, where the facts require, in co-operation with one or more other skilled persons each with different expertise.

21. Going back to the invention claimed in the Patent, the skilled person is someone who would have a practical interest in treating fibre-based materials *himself* to create a treated reinforcement of the type disclosed in the Patent. Dr Searle implied in his first report that this would in practice be a manufacturer of composite materials. Mr Godfrey made a point of distinguishing manufacturers of what I have called treated reinforcements and those making composites. Dr Searle appears to have accepted this distinction in his second report. In the end, as I have mentioned, both parties settled on a skilled team, including a treated reinforcement manufacturer and a composite manufacturer, with Hexcel throwing in a third member of the team for good measure.

22. Only one skilled person was required: a manufacturer of treated reinforcements. The skilled person was the same in this case for all the tasks he notionally had to address. As it turned out, I don't think it made any difference whether this person would in practice work for a manufacturer of composites or not. A manufacturer of treated reinforcements, including the nerdish variety with the characteristics of a skilled person, would not carry out his or her job in ignorance of what his treated reinforcements were used for. His common general knowledge would extend to methods of applying resin and other materials to treated reinforcements to make composites and to the selection of appropriate such materials. Nuances of whether his common general knowledge of these matters might differ from that of a skilled manufacturer of composites did not raise any issues in this case.

23. I would observe, though, that if one or both sides change their minds as to the characteristics of the skilled person or team after the CMC, as appears to have happened in this case, this must be discussed between them in correspondence and

then raised with the court, if only in writing. Otherwise they risk a discrepancy between the nature of the expert evidence ordered at the CMC and the characteristics of the skilled person or team required. Unlike the difference in this case, it may well matter.

The experts

24. Neither of the experts came from the technical field of the skilled person, but on the facts this raised no real difficulty. Both did their best to assist the court and both knew about making treated reinforcements.

Common general knowledge

25. There was no dispute about the law regarding common general knowledge, see in particular *Generics (UK) Ltd v Daiichi Pharmaceuticals Co Ltd* [2008] EWHC 2413 (Pat); [2009] R.P.C. 4, at [37]. The skeleton arguments revealed differences about what the common general knowledge of the skilled person, or team, would be. During the trial these either evaporated or turned out to be of no real significance.

Infringement

Hexcel's products

26. Hexcel served a product and process description ('PPD') which set out how its products in issue were made. Broadly, they are in sheet form consisting of layers. There are at least two: a glass fibre reinforcing fabric and a polyester release film carrying an array of dots of hot melt adhesive. It was common ground that this is a repositionable adhesive. Saertex asserted that the dots of adhesive between the fabric and the release film formed a third intermediate layer.

Construction

27. Hexcel admitted that its products fall within claim 1 as granted. Several points of construction fell to be decided in relation to the remaining claims in issue. There was no dispute about the law: I must apply the principles of construction set out in *Kirin Amgen Inc v Hoechst Marion Roussel Ltd* [2004] UKHL 46; [2005] R.P.C. 9, as summarised in *Virgin Atlantic Airways Ltd v Premium Aircraft Interiors UK Ltd* [2009] EWCA Civ 1062; [2010] R.P.C. 8, at [5].

<u>Pressing a removable insert on the face of the reinforcement that has received adhesive</u>

28. Claim 2 as granted and both claims as conditionally proposed to be amended include the step of "pressing a removable insert on the face that received said layer of repositionable adhesive."

29. Two points emerged. The first was whether the dots of adhesive used in the Hexcel products constitute a layer. In the end both experts asserted that they did and neither interpreted the Patent to require that the layer of adhesive should be a continuous layer. I agree.

30. The second point arose from a detail of how Hexcel's products are made. The dots of adhesive are applied to a polyester release film (the removable insert). Subsequently

the release film is applied to the reinforcing fabric layer so that the adhesive is in contact with, and forms a layer between, the fabric and the film. Hexcel argued that accordingly the removable insert is not pressed on the face of the fibre-based armature that received the layer of adhesive. The past tense of 'received' was emphasised: the pressing of the insert happens at the same time as the face of the armature receives the adhesive.

31. I think there is nothing in this. First, the experts did not suggest that it made any practical difference whether the adhesive contacted the removable insert first or the fabric. Secondly, in my view the skilled person would regard the inventor's purpose in relation to the relevant part of the Patent as having a layer of adhesive between the insert and the reinforcement, nothing more than that. The sequence of events would be regarded as of no consequence. I do not think that the skilled person would ponder the implications of tense in this context; it would be too pedantic.

32. Mr Aikens submitted that according to figure 3 of Hexcel's PPD the release film with adhesive is placed on the reinforcing fabric and then the two are passed through a pair of nip rollers. Thus, irrespective of what has already happened, the release film is pressed on to the fabric *after* the face of the fabric has received the adhesive. Mr Ward, who appeared for Hexcel, said that was not right: figure 2 gave a more accurate impression and that in fact the removable insert is placed on the face of the reinforcement simultaneously with that face receiving the adhesive. I accept Mr Ward's explanation but for the reasons I have given I think Hexcel's process satisfies this integer of the claim.

Adhesive present only on the surface of the reinforcement

33. The claims as proposed to be amended require the adhesive deposited on the surface of the reinforcement material to be present only on the surface of the material. The explanation of what this means comes in paragraph [0028] of the specification:

> "[0028] In this arrangement with the armature according to the invention, the thickness of the reinforcement is maintained over all its surface because only the face is fixed without causing the fibres to adhere constituting the armature together, which could have the result of decreasing in places the thickness. The adhesive is in effect present only on the surface."

34. It was agreed that here the skilled person is being told that a constant thickness of the reinforcement across its surface is desirable and made possible by keeping the adhesive on the surface of the reinforcement. This avoids the adhesive causing fibres of the reinforcement to adhere together, which could result in a decrease in thickness where that occurs. Mr Aikens submitted that on a purposive construction, the skilled person would interpret the words 'only on the surface' to mean that the adhesive may not penetrate the spaces between the fibres to an extent which would cause the fibres to adhere such as to give rise to a significant possibility that the thickness of the reinforcement would decrease anywhere across its surface. I accept that construction.

35. At the start of the trial Mr Ward handed up a 17 paragraph document entitled 'Defendant's Supplemental Note on Construction'. It included this:

> "**f) Present only on the surface**

> 13. Saertex say that the adhesive being present only on the surface should be construed as meaning that it does not extend far enough into the surface to cause the fibres constituting the reinforcement to adhere together, in reliance on [0028] (Skeleton ¶83). In principle this construction is understandable. In practice, however, given that the Patent says that adhesive can be applied with spray, it is not clear how such a result is achievable with any precision, and the Patent gives no assistance.
>
> 14. We assume that in their reliance on [0028], Saertex also take into account the last sentence, namely that "The adhesive is **in effect** present only on the surface." (emphasis added).
>
> 15. If so, i.e. if Saertex's construction encompasses the adhesive extending sufficiently far into the material that it has no practical effect on the performance of the reinforcement, then no difficulty arises. On that basis Hexcel would accept that this integer is fulfilled by the products said to infringe."

36. Paragraph 83 of Mr Aikens' skeleton, referred to by Mr Ward, said:

> "Saertex's case is that ['present only on the surface'] should be construed in accordance with [0028]: the claims require that the repositionable adhesive is present on one of the surfaces of the fibre-based material such that when placed in the mould "only the face is fixed without causing the fibres to adhere constituting the armature together, which could have the result of decreasing in places the thickness"."

37. The word 'encompasses' in paragraph 15 of Mr Ward's Note did not promote clarity, but the paragraph is plainly a concession that the adhesive in Hexcel's products is present only on the surface of the fibre reinforcement on one construction of the proposed amended claims. That is the construction which Mr Ward took to be advanced by Saertex's skeleton argument, based on paragraph [0028] of the Patent. Mr Ward and his clients can have had no real doubt that Mr Aikens' skeleton argument at paragraph 83 proposed the construction I have summarised above and this appears to be consistent with Mr Ward's Note.

38. That should have been an end of the matter but it was not. During his closing speech the following day Mr Ward changed tack and argued that Saertex had not proved that Hexcel's products had adhesive only on the surface of the reinforcement. Mr Aikens then mainly sought to argue that I could reach a conclusion on adhesive penetration in Hexcel's products by considering Hexcel's product and PPD – I was not at all persuaded of this. Mr Aikens also referred to Mr Ward's Note.

39. The unsatisfactory background to this has a bearing on how proceedings should be conducted, so I must say something about it. At the case management conference Hexcel was ordered to produce a PPD. This should have been sufficient to resolve all factual matters relating to infringement. The experts did not consider infringement. The CMC order permitting expert evidence limited that evidence to consideration of the nature of the skilled person, his common general knowledge and inventive step. As is usual in the IPEC, limitations of this sort are intended to direct the parties away from the temptation of drafting evidence which roams across every

conceivable topic on the basis that anything might turn out to be useful at trial. In this case it was assumed at the CMC that Hexcel's PPD would contain all the information necessary for the court to resolve the issues arising on infringement.

40. The obligation of ensuring that all necessary information was before the court rested on both sides. But as ever the party bearing the burden of proof was most at risk if this was not done. Having been served with the PPD Saertex should have raised the question of how far the adhesive penetrates in Hexcel's products and the effect of that penetration on fibre adhesion. Hexcel might have amended the PPD so as to resolve the matter. Alternatively Hexcel might have said that it had no idea whether there was any fibre adhesion or not and this may have led the parties to suppose that only an experiment could resolve the point. Had an application been made to perform experiments, I may or may not have concluded that the performance of experiments would satisfy the cost/benefit test which applies in this court (PD63, 29.2(2)). If not, it is likely that I would have ordered that the experts should each serve a short supplement to their report doing their best to reach a view on adhesive penetration in Hexcel's products, bearing in mind the nature of the fibre used, the characteristics of the adhesive, and so on. In short, it would have been possible to find a cost effective way of giving the court something to go on when considering whether the adhesive in Hexcel's products is present only on the surface of the reinforcement according to Saertex's construction. As it was, there was effectively nothing.

41. Neither Mr Aikens nor Mr Ward sought to argue that on a purposive construction of the claims this integer – the adhesive being present only on the surface of the fibre reinforcement – should be treated as struck out. I can see why, see *Société Technique de Pulverisation STEP v Emson Europe Limited* [1993] R.P.C. 513, in particular the judgment of Hoffmann LJ at 522. I must take the integer into account for the purpose of both infringement and validity

42. So far as infringement is concerned, had it not been for Mr Ward's Note I would have been forced to conclude that Saertex had not proved its case on infringement of the claims as conditionally proposed to be amended. As it is, on a fair reading of the Note I think Hexcel conceded that the adhesive in its products is present only on the surface of the reinforcement according to Saertex's construction of that term, which I have accepted.

Hot-melt glues

43. The added integer of claim 5 as conditionally proposed to be amended is that the adhesive is chosen from hot-melt glues. The PPD identifies the glue used in Hexcel's products as a hot-melt adhesive.

Conclusion on infringement

44. Hexcel's method falls within all the claims in issue.

Validity

45. All the claims in issue were alleged to lack both novelty and inventive step. An allegation of insufficiency was also pleaded, but only by way of a squeeze: if Saertex relied on a difficulty in applying or selecting an appropriate adhesive as part of the

problem of the prior art, the Patent did not teach the skilled person how to overcome that or those problems. The point did not arise.

Free beer

46. Mr Ward submitted that the validity of claim 1 as granted falls at first hurdle, without the need to consider the prior art, because it is a 'free beer' claim. He argued that the problem of the prior art identified in the Patent was an inability to reposition the reinforcement, once adhered by an adhesive, and the solution is to use any 'repositionable' adhesive. This is just defining the claim by reference to the problem.

47. I disagree. The vice of a classic free beer claim is that the patentee frames his claim by reference to a desirable end and thereby claims all solutions to a problem having only disclosed one (assuming he has done that much – in the case of a claim to free beer, probably not). The example given by Lord Hoffmann in *Lundbeck A/S v Generics (UK) Ltd* [2008] EWCA Civ 311; [2008] R.P.C. 19, at [61], was "A substance which is 10 times harder than diamond". Lord Hoffmann pointed out that a patentee could claim a particular substance with that quality, specifying its composition or structure, or, if that can't be done, limiting the claim by reference to the method used to make the substance. However the exemplified claim would cover other products, as yet undiscovered, which had not been enabled.

48. There might have been some substance to Mr Ward's criticism if the problem in the prior art was a lack of any adhesive which allowed the user a period in which to reposition an object fixed by the adhesive, and the claim was to 'a repositionable adhesive'. In fact it became clear during the trial that the experts recognised a category of adhesives, forming part of the prior art, which were regarded by them as repositionable adhesives. They are commercially marketed as such, by 3M and no doubt other manufacturers, distinguishing them from adhesives which are sold as being 'permanent' or 'temporary' (respectively: not allowing removal of the object stuck without damage to the substrate, and having no residual adhesive effect once the article is unstuck).

49. Claim 1 as granted is limited to a method of making a treated reinforcement consisting of essentially one simple step using a repositionable adhesive. The claim is drafted to bulk this up to look like two steps, but that is by the way. All variations of that one step are enabled. It is not relevant that new repositionable adhesives might be developed in the future. There is no requirement in law that all varieties of an element of a claim that could ever exist must have already been discovered. If the inclusion of an element of that type will reliably permit the skilled person to perform the invention, the invention is enabled.

The law

50. There was no dispute about the law governing novelty and inventive step. In relation to the former I was referred to *Smithkline Beecham plc's (Paroxetine Methanesulfonate) Patent* [2005] UKHL 59; [2006] R.P.C. 10, at [19] to [33]. With regard to inventive step, both Mr Aikens and Mr Ward said they would adopt the structured approach set out in *Pozzoli SpA v BDMO SA* [2007] EWCA Civ 588; [2007] F.S.R. 37, at [23], although neither took the optional route of suggesting an inventive concept for any of the claims.

51. Three items of prior art were relied on by Hexcel for its arguments on both lack of novelty and lack of inventive step. They were:

    (i) PCT Application WO 02/42548 A2 ('Cytec'),

    (ii) US Patent No. 4,349,599 ('Crystic'), and

    (iii) An article entitled 'Working with Fibreglass' by Bill Anderson, published in the August 1996 issue of *Model Aviation* ('Working with Fibreglass').

The prior art in summary

Cytec

52. Cytec discloses a method of cutting a dry fabric. It is particularly concerned with fabrics of the type that would be a reinforcement within the meaning of the Patent. The problem identified is the fraying and loosening of fibres at the edge created by the cutting. The solution is to dispense molten resin along the proposed cutting line of the fabric. When the resin has cooled, the fabric is cut along that line and the resin maintains the integrity of the fibres.

Crystic

53. Crystic addresses a similar problem to that discussed in the Patent, namely keeping a reinforcement in place during the addition of resin in the manufacture of a composite. Crystic's solution is to use a tape with an adhesive coating to anchor the reinforcement to a mould or alternatively another piece of reinforcement. The tape can be made of a variety of materials, one of which – suggested to be the most common – is glass fibre.

Working with Fibreglass

54. This is an article published in a magazine for model aircraft enthusiasts called *Model Aviation*. It describes a way of keeping fibreglass cloth in place on the fuselage of a model plane before impregnating the cloth with resin, thus strengthening the balsa wood structure with a fibreglass reinforcement. A piece of fibreglass cloth is laid on to a paper bag. The fibreglass is sprayed with a spray adhesive – 3M 77 Spray is recommended. A piece of waxed paper is put on to the fibreglass cloth, shiny side down, and smoothed by hand. The paper bag is pulled away from the underside of the fibreglass leaving the waxed paper attached to the other side of the fibreglass by the adhesive. In order to apply the fibreglass to the model aeroplane, the fibreglass with waxed paper is cut to the appropriate size, the waxed paper is peeled off and the fibreglass attached to the model. The fibreglass is then coated with resin.

Claim 1 as granted

55. This claim is to a method of manufacturing a fibre-based armature "intended to be embedded in a matrix or a mixture of matrices".

56. Neither party gave any attention to the part of the claim I have just quoted. Despite the word 'intended' I would reject the introduction of any subjective element to the claim and construe it mean that the fibre-based armature is suitable for embedding in

a matrix or mixture of matrices. This element of the claim may have been ignored because it is hard to imagine a fibre-based armature that could not be so embedded. On the other hand there was evidence that some adhesives could be incompatible with some resins and so interfere with the formation of the composite. So a fibre-based material coated with a particular adhesive might not be suitable for embedding in certain matrices to make a fibre-based armature. This possibility emerged as the basis for the alleged invention of claim 1 during the trial, though not by reference to this part of the claim. I will turn to the argument below.

57. Quite a lot of attention was paid, particularly by Mr Aikens, to the method being for the manufacture of a fibre-based *armature*. He contended at one point that if the fibre-based material was not for the reinforcement of something, it was not an armature. This I think amounted to an attempt to introduce a subjective element into the claim. It is irrelevant what the operator has in mind for the fibre. If (a) it is suitable for embedding in a matrix such as resin and (b) it has a reinforcing effect within the composite so made, the method claimed is a method of manufacturing a 'fibre-based armature'.

58. It follows that claim 1 as granted boils down to nothing more than depositing a repositionable adhesive on at least one surface of fibre-based material where the adhesive is compatible with a matrix in which the material could be embedded.

Cytec and novelty

59. In Cytec resin is deposited on one of the surfaces of the reinforcement. Mr Aikens argued that Cytec did not deprive claim 1 as granted of novelty because the resin was not an adhesive. But both experts said that the resins considered in Cytec included repositionable adhesives. On that evidence claim 1 as granted lacks novelty.

Cytec and inventive step

60. No further argument arose in relation to inventive step.

Crystic and novelty

61. Crystic expressly discloses the deposition of adhesive on to glass fibre tape. Mr Aikens argued first that the tape was not a fibre-based armature and secondly that there was no disclosure of a repositionable adhesive.

62. Mr Aikens's first argument in the end came down to a submission that in Crystic the embedded tape's contribution to the reinforcement of the composite was *de minimis*. Both experts said that the tape would make at least some sort of contribution to reinforcement and neither dismissed this as *de minimis*.

63. Turning to the second argument, the adhesive used in Crystic was described as being 'permanently tacky'. The experts disagreed about what this would mean to the skilled person. Dr Searle took it to mean repositionable, whereas Mr Godfrey said it could be, but was not necessarily repositionable. In Venn diagram terms, Mr Aikens said that 'repositionable' was a circle within the larger circle of 'permanently tacky'.

64. I think it is probably not the case that the skilled person would treat 'permanently tacky' and 'repositionable' as exact synonyms. I accept Mr Godfrey's evidence and on that basis claim 1 as granted does not lack novelty over Crystic.

Crystic and inventive step

65. Mr Godfrey accepted in cross-examination that if the skilled person had been trying to implement the teaching of Crystic, he would have been aware of the advantage of being able to reposition the tape and would have selected a repositionable adhesive. I therefore find that claim 1 as granted lacks inventive step over Crystic.

Working with Fibreglass and novelty

66. Saertex argued that the adhesive used in the Working with Fibreglass was not repositionable. It was identified to be an adhesive manufactured by 3M and given the trade identification 3M 77. Both experts were familiar with 3M 77. Dr Searle described it as 'repositionable' within the meaning of the Patent. Mr Godfrey observed that 3M 77 would permit what he regarded as only a short time in which to reposition a reinforcement, but by implication he accepted that it was a repositionable adhesive. On that evidence I find that claim 1 as granted lacks novelty over Working with Fibreglass.

Inventive step generally: technical prejudice

67. In the course of his submissions on Working with Fibreglass and inventive step, Mr Aikens developed an argument concerning the nature of the invention of claim 1 as granted. He said the invention was the disclosure that it was possible to use a repositionable adhesive on a reinforcement that would not interfere with the resin or other matrix used to make a composite. The invention was thus overcoming an alleged technical prejudice in the mind of the skilled person: at the priority date he would have rejected out of hand the idea of using a repositionable adhesive to allow him to reposition his reinforcement. The Patent informed him of that possibility.

68. Basing an invention on a prejudice is possible, but seldom easy. In *Pozzoli* Jacob LJ (with whom Keene and Mummery LJJ agreed) said this:

> "[25] … There is an intellectual oddity about anti-obviousness or anti-anticipation arguments based on 'technical prejudice.' It is this: a prejudice can only come into play once you have had the idea. You cannot reject an idea as technically unfeasible or impractical unless you have had it first. And if you have had it first, how can the idea be anything other than old or obvious? Yet when a patent demonstrates that an established prejudice is unfounded – that what was considered unfeasible does in fact work, it would be contrary to the point of the patent system to hold the disclosure unpatentable.
>
> [26] I put it this way in *Union Carbide Corp v BP Chemicals Ltd* [1998] R.P.C. 1, 13:
>
> > "Invention can lie in finding out that that which those in the art thought ought not be done, ought to be done. From the point of view of the

> purpose of patent law it would be odd if there were no patent incentive for those who investigate the prejudices of the prior art."
>
> [27] Patentability is justified because the prior idea which was thought not to work must, as a piece of prior art, be taken as it would be understood by the person skilled in the art. He will read it with the prejudice of such a person. So that which forms part of the state of the art really consists of two things in combination, the idea *and* the prejudice that it would not work or be impractical. A patentee who contributes something new by showing that, contrary to the mistaken prejudice, the idea will work or is practical has shown something new. He has shown that an apparent 'lion in the path' is merely a paper tiger. Then his contribution is novel and non-obvious and he deserves his patent.
>
> [28] Where, however, the patentee merely patents an old idea thought not to work or to be practical and does not explain how or why, contrary to the prejudice, that it does work or is practical, things are different. Then his patent contributes nothing to human knowledge. The lion remains at least apparent (it may even be real) and the patent cannot be justified.
>
> [29] This analysis does not require a different way of looking at the inventive concept depending on whether or not the patentee has shown the prejudice is unjustified as the judge thought at [67]. It is simply that in the former case the patentee has disclosed something novel and non-obvious, and in the latter not. The inventive concept, as I have said, is the essence of what is in the claim and not dependent on any question about a prejudice being overcome."

69. The case law of the Technical Boards of Appeal of the European Patent Office indicates that the Boards of Appeal require a high standard of proof that the prejudice relied on is widely or universally held by those skilled in the art in the relevant field. This will commonly require evidence from a document such as a standard textbook or, if none exists in the relevant field, other documents which demonstrate the widespread nature of the false belief. For a discussion of this topic and summaries of the many decisions on the point delivered by the Boards of Appeal, see *Case Law of the Boards of Appeal of the European Patent Office*, 7th ed., 2013.

70. The evidence in the present case came nowhere close to establishing the alleged prejudice. In my view it is likely that the skilled person would understand that using his common general knowledge and possibly with a little experimentation he could obtain or create an adhesive which both falls into the category of 'repositionable adhesive' and would be compatible with the resin used to make a composite. It would be obvious to apply such an adhesive to a reinforcement to keep the reinforcement in place in a mould or elsewhere.

Working with Fibreglass and inventive step

71. Saertex's argument in relation to Working with Fibreglass and inventive step was based on the alleged invention of claim 1 as granted, discussed above. I find the claim 1 as granted would lack inventive step over Working with Fibreglass even if 3M 77 were not a repositionable adhesive.

Claim 2 as granted

72. The added step in the method of claim 2 is that the removable insert is pressed on the face of the fibre-based material that received a layer of repositionable adhesive.

Cytec: novelty and inventive step

73. No argument based on lack of novelty of claim 2 over Cytec was pursued by Hexcel.

74. Saertex admitted that it was obvious to press a removable insert on to the face of the fibre which had received the adhesive, but argued that it would not have been obvious to have a layer of adhesive. One embodiment of the invention described in Cytec involved spraying a resin adhesive on to a release sheet and then applying that to the fabric. Dr Searle took the view that this would provide a layer. In cross-examination Mr Godfrey appeared to accept this, although he did not use the word 'layer'. I find that claim 2 lacks inventive step over Cytec.

Crystic and inventive step

75. Saertex admitted that it would be obvious to use a backing sheet, i.e. to press a removable insert, on the side of the tape in Crystic that had received a layer of adhesive.

Working with Fibreglass: novelty and inventive step

76. No separate argument for the novelty or inventive step of claim 2 was advanced by Saertex in relation to Working with Fibreglass, in which a backing sheet was used.

Claim 1 as conditionally proposed to be amended

77. The feature added in the method of this claim on top of claims 1 and 2 as granted is that the adhesive is present only on the surface of the reinforcement. I have discussed the construction of this feature above in the context of infringement. No attempt was made to find out whether the penetration of the adhesive in the three items of prior art was such as to cause fibre adherence, and therefore to give rise to the significant possibility of decreasing the thickness of the fibre reinforcement in places. Rather, there was no direct investigation as to whether this was not the case and that therefore the adhesive was present only on the surface. I make no criticism about this. It may not have been possible and if it was, the cost of the investigation may not have satisfied the cost/benefit test. But it meant that I had to reach a conclusion on inventive step and amended claim 1 on the expert evidence available.

78. Hexcel did not argue that amended claim 1 lacked novelty over any of the items of prior art.

Cytec and inventive step

79. Both experts took the view that since the primary point of the invention in Cytec was to bind fibres and prevent fraying, it was to be expected that the skilled person would not want the adhesive to be present only on the surface. The specification refers to penetration of the adhesive as being preferably between 40 and 90%. Dr Searle speculated that a reader of Cytec who was concerned with extracting air from the

fabric in a closed mould system, and who was not concerned with preventing the fabric from fraying, would avoid excess resin. I take the view this goes against the basic aim in Cytec, i.e. to prevent fraying. In my judgment amended claim 1 is not obvious over Cytec.

Crystic and inventive step

80. Inventive step was not much pressed by Saertex in respect of amended claim 1. Dr Searle thought that one obvious implementation of Crystic would be to have the adhesive only on the surface of the fabric tape and this was not disputed by Mr Godfrey. Unlike Cytec there was nothing about the invention in Crystic to direct the reader away from using the adhesive in a manner such that it was only on the surface of the tape. It seems to me that this would be an obvious alternative. I find that amended claim 1 is obvious over Crystic.

Working with Fibreglass and inventive step

81. Dr Searle pointed out that in relation to the spraying of the adhesive onto the fibreglass the reader of Working with Fibreglass is recommended to "keep it light". However he accepted that it was impossible to tell whether the adhesive remained only on the surface. Mr Godfrey thought that the adhesive would penetrate quite far into the fibreglass cloth because it would be very thin. Mr Aikens pointed out that one of the apparent concerns of the author was to prevent fraying and so, as in Cytec, an advantage was the binding of fibres.

82. It is difficult on the evidence available to reach any firm conclusion on this, but it seems to me that on balance Working with Fibreglass teaches away from keeping the adhesive only on the surface because of its concern with avoiding fraying of the fibreglass cloth. I find that Hexcel has not established a lack of inventive step over the disclosure in this article.

Claim 5 as conditionally proposed to be amended

83. This claim introduces the integer of the adhesive being a hot-melt glue. Since amended claim 1 does not lack novelty over any of the prior art, nor does amended claim 5. Likewise amended claim 5 cannot lack inventive step over Cytec or Working with Fibreglass because amended claim 1 does not. That leaves Crystic. Saertex conceded that Crystic discloses a hot-melt adhesive. I therefore find that amended claim 5 lacks inventive step over Crystic.

Conclusion

84. I find as follows:

(i) Claim 1 as granted lacks novelty over Cytec and Working with Fibreglass and lacks inventive step over Crystic.

(ii) Claim 2 as granted lacks novelty over Working with Fibreglass and lacks inventive step over Cytec and Crystic.

(iii) Claim 1 as proposed to be amended lacks inventive step over Crystic.

(iv) Claim 5 as proposed to be amended lacks inventive step over Crystic.

85. The Patent is therefore invalid both as granted and as conditionally proposed to be amended.

86. Had the Patent been valid, all the claims in issue would have been infringed by Hexcel.