United States Court of Appeals for the Federal Circuit

AUGUST TECHNOLOGY CORPORATION AND RUDOLPH TECHNOLOGIES, INC.,
Plaintiffs-Appellees,

v.

CAMTEK, LTD.,
Defendant-Appellant.

2010-1458

Appeal from the United States District Court for the District of Minnesota in case no. 05-CV-1396, Chief Judge Michael J. Davis.

Decided: August 22, 2011

DANIEL W. MCDONALD, Merchant & Gould, of Minneapolis, Minnesota, argued for plaintiffs-appellees. With him on the brief were ERNEST W. GRUMBLES III, RACHEL C. HUGHEY, and JOSEPH E. LEE.

JONATHAN S. CAPLAN, Kramer Levin Naftalis & Frankel LLP, of New York, New York, argued for defendant-appellant. With him on the brief were CHRISTOPHER A. COLVIN and DONALD L. RHOADS.

Before DYK, MOORE and O'MALLEY, *Circuit Judges*.

MOORE, *Circuit Judge*.

Camtek, Ltd. (Camtek) appeals the district court's final judgment based on a jury verdict that the asserted claims of U.S. Patent No. 6,826,298 (the '298 patent) are infringed, not invalid, and not unenforceable, and its award of lost profits and grant of a permanent injunction. Camtek also appeals the trial court's dismissal of its inequitable conduct defense and counterclaim. We affirm the district court's denials of judgment as a matter of law (JMOL) and a new trial on invalidity. We also affirm the court's dismissal of Camtek's inequitable conduct defense and counterclaim. We conclude, however, that the district court erred in its claim construction, and vacate the district court's judgment of infringement, its award of damages, and its grant of a permanent injunction, and remand for further proceedings consistent with this opinion.

BACKGROUND

August Technology Corporation and Rudolph Technologies, Inc. (collectively, August Tech) asserted claims 1 and 3 of the '298 patent against Camtek in district court. The jury returned a special verdict that Camtek and its Falcon device literally infringed both claims, but that the infringement was not willful, and awarded approximately $6.8 million in lost profits. The jury's verdict also indicated that Camtek failed to prove that the asserted claims would have been obvious, and that August Tech's NSX-80 device was not on sale prior to the '298 patent's critical date. The court permanently enjoined Camtek from making, using, selling, and offering for sale its infringing Falcon machines, including offers communicated entirely in the United States for sales to occur overseas. Also, the district court previously severed Camtek's inequitable conduct defense based on August

Tech's nondisclosure of the NSX-80 to the United States Patent and Trademark Office. Because the jury found that the NSX-80 was not prior art, the court held that there was no need for a separate trial on inequitable conduct. The district court denied Camtek's post-trial motions for JMOL or a new trial on infringement, damages, and obviousness. Camtek appeals, and we have jurisdiction under 28 U.S.C. § 1295(a)(1).

DISCUSSION

We apply the procedural law of the relevant regional circuit when reviewing the district court's denial of a JMOL or a new trial. *Revolution Eyewear, Inc. v. Aspex Eyewear, Inc.*, 563 F.3d 1358, 1370 (Fed. Cir. 2009); *Ecolab, Inc. v. FMC Corp.*, 569 F.3d 1335, 1341 (Fed. Cir. 2009). In the Eighth Circuit, the appellate court reviews *de novo* the denial of a JMOL, using the same standards as the district court. *Concord Boat Corp. v. Brunswick Corp.*, 207 F.3d 1039, 1049 (8th Cir. 2000). We will not overturn a jury's factual finding so long as it is supported by substantial evidence. *Ecolab*, 569 F.3d at 1346 (citing *United States v. Vertac Chem. Corp.*, 453 F.3d 1031, 1039 (8th Cir. 2006)). The district court grants a new trial only to prevent a miscarriage of justice, and the appellate court reviews its decision for an abuse of discretion. *United States v. McClellon*, 578 F.3d 846, 857 (8th Cir. 2009); *Bass v. Gen. Motors Corp.*, 150 F.3d 842, 845 (8th Cir. 1998).

I. Claim Construction and Infringement

On appeal, Camtek challenges the district court's claim construction. Specifically, Camtek asserts that the district court erred in construing two claim limitations, "wafer" and "strobes . . . based on velocity," and that under the proper construction, it does not infringe. Because the district court

incorrectly construed the claim term "wafer," we vacate the judgment of infringement, and remand for further proceedings consistent with this opinion.

A. A Wafer and a Plurality of Wafers

Claims 1 and 3 are directed to a system and a method for inspecting integrated circuits printed on substrates such as wafers. Claim 1 recites:

> An automated system for inspecting a substrate such as a wafer in any form including whole patterned wafers, sawn wafers, broken wafers, and wafers of any kind on film frames, dies, die in gel paks, die in waffle paks, multi-chip modules often called MCMs, JEDEC trays, Auer boats, and other wafer and die package configurations for defects, the system comprising:
>
> a wafer test plate;
>
> a wafer provider for providing a wafer to the test plate;
>
> a visual inspection device for visual inputting of *a plurality of known good quality wafers* during training and for visual inspection of other unknown quality wafers during inspection;
>
> at least one of
>
> a brightfield illuminator positioned approximately above,
>
> a darkfield illuminator positioned approximately above, and
>
> a darkfield laser positioned approximately about the periphery of the wafer test plate,

> all of which are for providing illumination to the unknown quality wafers during inspection and at least one of which strobes to provide short pulses of light during movement of a wafer under inspection based on a velocity of the wafer; and
>
> a microprocessor having processing and memory capabilities for developing a model of good quality wafer and comparing unknown quality wafers to the model.

The dispute in this case centers around whether "a wafer" is also "a plurality of wafers." Both parties agree that a whole wafer is typically diced into many pieces called dies,[1] and that each die contains a complete functional circuit. The district court construed a wafer to be "a thin slice of semiconductor material with circuitry thereon that is ready for electrical testing, *or any part thereof*. However, a 'wafer' is not the same as a 'die.' A wafer is made up of multiple die[s]." J.A. 37, 132 (emphasis added). The district court explained: "wafer should be construed to include a part of a wafer. Throughout the patent, reference is made to wafers, in whole or in part." J.A. 131. The court further explained that defining a wafer as "any portion of a wafer" does not improperly give the same meaning to "die" and "wafer" because it requires the wafer or portion of a wafer to include multiple dies. J.A. 132 ("Thus, Plaintiffs' construction of wafer does not provide the same meaning as die – the former refers to plural, while the latter refers to singular.").

Claim 1 requires "visual inputting a plurality of known good quality wafers during training" to teach the system a standard for detecting defects. The district court referred to

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[1] Although "die" is an acceptable plural form of die, since the claims use "dies," we will also.

this "plurality of known good quality wafers" limitation as the multiple wafer limitation. This limitation requires multiple good wafers to be used to train the system – so the inspection device will know a flawed wafer when it sees one. In light of the district court's claim construction, August Tech and its expert, Dr. Mundy, argued that the accused Falcon device infringes the multiple wafer limitations because "the Falcon visually inputs sections of multiple die from different parts of a whole wafer." J.A. 92. In its denial of JMOL on this point, the district court explained: "the Court's definition of the term 'wafer' could refer to each of the sections of multiple die visually inputted by the Falcon. Therefore, the Court finds sufficient evidence to support the jury's conclusion that the Falcon literally infringed the 'plurality of wafers' limitation." *Id.* Thus, under the district court's construction, a single wafer can be a plurality of wafers.

On appeal, Camtek argues that the district court erred by including the "on any part thereof" phrase in its construction, asserting that such a definition "erroneously permits a single physical wafer to have an arbitrary number of notional 'wafers' within it." Appellant's Br. 23. Camtek argues that wafers are physically distinct substrates that are inspected by the claimed invention, and that a plurality of wafers means more than one physically discrete wafer. Camtek asserts that the partial wafers, such as sawn wafers and broken wafers as recited in the preambles, are physically distinct substrates. Camtek also points to the '298 patent's specification at column 8, lines 60-64, which it asserts discusses wafers as discrete physical objects that are physically handled.

August Tech first responds that Camtek waived this "notional wafer" argument by failing to advance it before the district court. We disagree. Before the district court, the

parties simultaneously submitted proposed claim constructions. Camtek's proposed claim construction for wafer, "[a] thin semiconductor slice . . . ," does not permit a single wafer to also be multiple wafers. J.A. 129-130. August Tech, in contrast, proposed the "or any part thereof" language. *Id.* In its Markman Rebuttal Brief, Camtek argued that August Tech's proposed construction of a plurality of wafers would perversely encompass a single wafer with multiple dies – thus reading out "a plurality of" from the claims. Markman Rebuttal Br. 9-10. During the jury instruction phase, the court heard additional argument regarding the proper construction of wafer. And, significantly, the court made clear in its JMOL order that it was aware of the notional wafer issue, but "intended" to define the "term 'wafer' to also refer to any part of a whole wafer other than a single die." J.A. 91-92. We cannot say, on this record, that Camtek failed to preserve its notional wafer argument for appeal.[2]

With respect to the proper construction of wafer, August Tech contends that the claims do not require wafers to be physically separate from each other, and that Camtek's construction would read "dies" out of the definition of wafers in the preambles. Accordingly, August Tech argues, the district court correctly adopted its proposed construction, which allows for portions of a single discrete wafer to be wafers.

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[2] Although the question of whether a wafer can also be a plurality of wafers has been a centerpiece of this appeal, it was at most a peripheral issue before the district court. In fact, it was not clearly raised during the Markman hearing. Certainly Camtek could have more clearly explained to the district court the implications of August Tech's "or any part thereof" language.

Claim construction is a matter of law we review *de novo*. *Cybor Corp. v. FAS Techs., Inc.*, 138 F.3d 1448, 1455-56 (Fed. Cir. 1998) (en banc). The words of a claim are generally given their ordinary and customary meaning as understood by a person of ordinary skill in the art at the time of the invention when read in the context of the specification and prosecution history. *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1313 (Fed. Cir. 2005) (en banc). A claim's preamble may limit the claim when the claim drafter uses the preamble to define the subject matter of the claim. *Allen Eng'g Corp. v. Bartell Indus.*, 299 F.3d 1336, 1346 (Fed. Cir. 2002). We construe the preamble as limiting when it is "necessary to give life, meaning and vitality" to the claim based on the facts of the case at hand and in view of the claim as a whole. *Id.* (internal quotation marks omitted).

To determine the meaning of the plurality of wafers limitations we begin with the language of the claim itself. In the claims' preambles, the inventors listed example "wafers" such as whole wafers, sawn and broken wafers, and dies. Nothing in the preamble compels us to conclude that wafers are not discrete objects. The claim itself, however, distinguishes between a single wafer and multiple wafers:

> a wafer provider for providing *a wafer* to the test plate;
>
> a visual inspection device for visual inputting of *a plurality of* known good quality *wafers* during training and for visual inspection of other unknown quality *wafers* during inspection; . . .

The most logical reading of these claim limitations is that the wafer provider provides a single object called a wafer to the test plate, and that visual inspection and training requires more than one of these objects. Reading this otherwise renders any difference between the singular and

the plural terms superfluous. *See Merck & Co. v. Teva Pharms. USA, Inc.*, 395 F.3d 1364, 1372 (Fed. Cir. 2005) ("A claim construction that gives meaning to all the terms of the claim is preferred over one that does not do so.").

System claims 18 and 26 in the '298 patent's parent, U.S. Patent No. 6,324,298 (the parent patent), further indicate that a single wafer is not also multiple wafers. *z4 Techs., Inc. v. Microsoft Corp.*, 507 F.3d 1340, 1348 (Fed. Cir. 2007) ("We presume, unless otherwise compelled, that the same claim term in the same patent or related patents carries the same construed meaning." (internal quotation marks omitted)). Claims 18 and 26 recite the same example list of wafer formats in their preambles as do the asserted claims, and they also recite a similar viewing "a plurality of known good wafers" feature. Claims 18 and 26, however, further recite "a wafer alignment device for aligning each and every wafer provided to the test plate at the same x, y, z, and θ location." These claims require "each and every wafer" to be aligned at the exact same location and orientation. If a wafer provided to the test plate included a plurality of wafers, however, some of the wafers would not be aligned to the exact same location.

The '298 patent's specification consistently treats wafers as discrete objects. For example, the inventors describe "creating a new recipe" which entails "defining how many wafers W are selected from cassettes or other storage receptacles" and "defining how the dies on each wafer W are to be selected for defect inspection." '298 patent col.7 ll.36-40. The specification proceeds to explain that the wafer provider provides wafers to the test plate from cassettes, in which "multiple wafers are stacked," and magazines:

> [T]he wafer providing means 14 includes a robotic arm that pivots from a first position where a wafer

> W is initially grasped from a magazine or cassette to a second position where the wafer W is positioned on the wafer test plate 12 for inspection. After inspection, the robotic arm pivots the wafer W from the second position at the test plate 12 back to the first position where the wafer W is placed back in or on the magazine or cassette.

'298 patent col.8 ll.61-67. Based on the claim language as read in light of the specification, we conclude that a wafer is a discrete object, and thus a single wafer, even though it may later be diced into hundreds of separate dies, is not itself also a plurality of wafers. Contrary to August Tech's arguments, this construction does not read "die" out of the definition of wafer. On the contrary, the claims neatly accommodate a wafer in any discrete format, such as a whole wafer, a discrete portion of a wafer (a sawn wafer or a broken wafer), and even a discrete physical substrate that includes only an individual die.

We reject August Tech's assertions that a claim construction requiring wafers to be discrete objects is incorrect because it excludes the preferred embodiment which August Tech argues trains on and inspects multiple dies on a single wafer. Appellee's Br. 33-36 (citing '298 patent figs.3 & 5; col.6 ll.65-67; col.7 ll.20-25). August Tech argues that a claim construction "that excludes a preferred embodiment from the scope of the claim is rarely, if ever, correct." Appellee's Br. 35 (quoting *MBO Labs., Inc. v. Becton, Dickinson & Co.*, 474 F.3d 1323, 1333 (Fed. Cir. 2007)).

The Description of the Preferred Embodiment states that the good die model can be created by repeating the visual inputting process for "a plurality of known good die or wafers as viewing a pool of wafers is necessary to form a model of a good die." '298 patent col.14 ll.15-17; *see also*

col.16 ll.1-8 (discussing "align[ing] the known good *wafers* to form the good *die* model." (emphases added)); col.6 ll.65-66 (disclosing "a camera 20 or other visual inspection device for visually inputting good die during training"); col.7 ll.11-34 (discussing training by viewing a plurality of known good die). The disclosure therefore teaches both using multiple die and multiple wafers to train.

The fact that the claims at issue cover only the latter – a plurality of known good wafers – is little cause for concern. "The mere fact that there is an alternative embodiment disclosed in the [asserted patent] that is not encompassed by [our] claim construction does not outweigh the language of the claim, especially when the court's construction is supported by the intrinsic evidence." *TIP Sys., LLC v. Phillips & Brooks/Gladwin, Inc.*, 529 F.3d 1364, 1373 (Fed. Cir. 2008). This is especially true where, as here, other unasserted claims in the parent patent cover the excluded embodiments. *See PSN Ill., LLC v. Ivoclar Vivadent, Inc.*, 525 F.3d 1159, 1166 (Fed. Cir. 2008) ("[C]ourts must recognize that disclosed embodiments may be within the scope of other allowed but unasserted claims."). Unasserted claim 10 of the parent patent recites a method of "inspecting a die on a substrate such as a wafer in any form including [the same list of examples]," and comprises the steps of training a model as to a good die by viewing multiple known good dies, and then inspecting unknown quality dies. Claim 10, like the specification sections cited by August Tech, does not recite whether the viewed or inspected dies are on one or more wafers.

The inventors chose to draft claims directed to training on and inspecting multiple discrete wafers. The district court's construction is in error so far as it defines a wafer as any portion of a wafer having two or more dies. We construe a wafer as recited in the claims at issue as a thin,

discrete slice of semiconductor material with circuitry thereon that is ready for electrical testing having one or more dies. A plurality of wafers means more than one physically distinct wafer.

Because the jury was given a flawed claim construction, the verdict of infringement must be vacated. August Tech also argues that even under this construction, Camtek and its Falcon inspection machine infringe the asserted claims. We decline to make this factual finding in the first instance, and instead remand to the district court for a limited trial on infringement with respect to this claim element.

B. Strobes or Flashes Based on Velocity

Claim 1 of the '298 patent recites a strobing feature where an illuminator strobes as the wafer is moving "based on a velocity of the wafer." Method claim 3 similarly recites that an illumination source is flashed "at a sequence correlating to a velocity of the wafer." The district court construed these limitations to require strobing[3] based at least in part on "the rate of change of the position of the wafer." J.A. 38, 136-40. The district court further explained that so long as the accused system strobes based on the wafer's velocity, it does not matter whether the strobing also depends upon the wafer's position.

No party disputes on appeal that the claimed invention periodically strobes a light source based on a wafer's velocity to help a camera capture a still image of the constantly-moving wafer. Camtek argues instead that the asserted claims preclude strobing that is also based on the wafer's

[3] For simplicity, we will use the term strobing to refer to both strobing and flashing as each is recited in the asserted claims.

position. Camtek concedes that the claims do not recite any limitation prohibiting strobing based on position. Camtek's position on appeal is that during prosecution August Tech disclaimed strobing based on the wafer's position.

"Absent a clear disavowal or contrary definition in the specification or the prosecution history, the patentee is entitled to the full scope of its claim language." *Home Diagnostics, Inc. v. Lifescan, Inc.*, 381 F.3d 1352, 1358 (Fed. Cir. 2004). During prosecution, the inventors twice amended their claims to overcome U.S. Patent No. 4,644,172 (Sandland). As described by the examiner, Sandland discloses a start-and-stop system that moves the wafer, stops the wafer to capture a still image, and then moves the wafer again. After the first rejection, the inventors amended the claimed strobing feature from "strobes during inspection" to "strobes based on a velocity of a wafer during inspection," and explained that Sandland does not teach strobing, but instead provides constant illumination. J.A. 7532, 7598, 7601. The examiner then rejected the inventors' claims again, and noted that Sandland's light could be switched on and off by the computer "to [e]nsure that [one lamp] is turned on and [the other lamps] are turned off [when] the image is grabbed." J.A. 6730. In response, the inventors amended the claim to recite "strobes to provide short pulses of light during movement of a wafer under inspection based on the velocity of the wafer," and explained that Sandland does not teach flashing the lights on and off, flashing or strobing based on velocity, or emitting short pulses of light during movement of the wafer. J.A. 7644, 7647-49. Because we see no clear disavowal of strobing according to position, we agree with the district court's construction of strobing based on velocity – the strobing must be based at least in part on the wafer's velocity, i.e., on the rate of change of the position of the wafer.

Camtek also argues on appeal that, under the district court's claim construction, there is no evidence supporting the jury's verdict of infringement with respect to this strobing limitation. The parties apparently agree that the evidence shows that the Falcon strobes as a moving wafer passes certain preset positions. Camtek argues that this proves that the Falcon strobes based on position, but not velocity as required by the claims. August Tech responds that the evidence shows that the Falcon strobes based on the rate of change of the wafer's position: as shown by timing evidence and admitted by Camtek's witness, as the wafer moves faster, the strobes occur more frequently. August Tech also notes that the Falcon's position circuit is disabled unless the wafer is moving. Accordingly, we conclude that the jury was presented with substantial evidence that the Falcon strobes based on the rate of change of the position of the wafer. We see no error in the district court's analysis of this issue. As such, the district court need not include the strobing limitation in its retrial on infringement.

II. Nonobviousness In View of Chau and Moriya

The jury returned a special verdict that Camtek failed to show that the asserted claims would have been obvious by clear and convincing evidence over U.S. Patent No. 5,859,698 (Chau) and U.S. Patent No. 5,298,963 (Moriya), which were not before the examiner during prosecution. The court entered judgment in accordance with that verdict, and in denying Camtek's motion for JMOL. In particular, the court held that there was substantial evidence that the cited prior art failed to teach the strobing limitation, which the court construed to require that the "illuminator freezes the patterns of the moving wafer onto the visual inspection device." J.A. 101, 135-39.

On appeal, Camtek argues that Chau teaches all of the elements of the asserted claims except strobing, which is taught by Moriya. August Tech disagrees and argues that Moriya does not relate to inspecting patterns on wafers. August Tech asserts that Moriya is instead directed to inspecting bare, unfinished wafers before any dies are fabricated thereon. According to August Tech's expert, Moriya does not contemplate inspecting dies or patterns on wafers, and never even mentions dies or patterns. J.A. 7029, 7033-36. August Tech also asserts that Moriya discloses an embodiment where the wafer is rotated, Moriya col.5 ll.38; col.7 ll.18-37, and that Camtek's expert admitted that rotating was not suitable for inspecting patterned wafers. J.A. 6673-74. Camtek argues, however, that strobing as taught by Moriya will freeze whatever patterns are on the wafer for the camera, and points to an embodiment illustrated in Fig. 20A and discussed at column 6, lines 12-65; where the wafer is moved back and forth in adjacent straight lines, like mowing a lawn.

Although Camtek's arguments are not without merit, there was substantial evidence supporting the jury's fact-finding given the expert testimony that Moriya does not contemplate strobing a moving wafer to freeze die patterns for the camera as required by the asserted claims. Therefore, we affirm the trial court's denial of a JMOL and a new trial on this issue.

III. The NSX-80

During trial, Camtek also argued that August Tech's NSX-80 wafer inspection machine was prior art. The jury concluded in its special verdict that the NSX-80 was not on sale prior to the '298 patent's critical date, July 15, 1997. Because the jury found that the NSX-80 was not on sale before the critical date and thus was not § 102(b) prior art,

the district court dismissed as moot Camtek's inequitable conduct charges which were based on non-disclosure of the NSX-80. On appeal, Camtek argues that the district court erred as a matter of law in Jury Instruction 23 and that this error caused the jury to wrongly find that the NSX-80 was not prior art. In particular, Camtek argues that Jury Instruction 23 wrongly instructed the jury that: "In order to be on 'sale' the NSX-80 must also have been ready for patenting at the time the alleged offer for sale is made." J.A. 56.[4] Had the jury considered the NSX-80 in combination with the other prior art, it could have found the claims obvious, Camtek contends.

Before determining whether the NSX-80 would have rendered the claims obvious, we first consider whether the device could qualify as 102(b) prior art. Based on Jury Instruction 23, the jury concluded that it does not. We agree with Camtek, however, that this instruction contains an erroneous statement of law.

Section 102(b) requires that "the invention was . . . on sale in this country" before the critical date. The Supreme Court has explained that the § 102(b) on-sale bar applies when two conditions are met before the critical date: (1) the product is the subject of a commercial offer for sale, and (2) the invention is ready for patenting. *Pfaff v. Wells Elecs., Inc.*, 525 U.S. 55, 67 (1998). Disclosure of inventions is one of the primary objectives behind the limited time patent grant. *Aronson v. Quick Point Pencil Co.*, 440 U.S. 257, 262 (1979) (Among the "purposes of the federal patent system" is to "promote[] disclosure of inventions to stimulate further innovation and to permit the public to practice the invention

[4] We note that Jury Instruction 23 was patterned on the American Intellectual Property Law Association model jury instruction.

once the patent expires."); *Kewanee Oil v. Bicron*, 416 U.S. 470, 481 (1974) ("When . . . the information contained in [a patent] is circulated to the general public and those especially skilled in the trade, such additions to the general store of knowledge are of such importance to the public weal that the Federal Government is willing to pay the high price . . . of exclusive use for its disclosure, which disclosure, it is assumed, will stimulate ideas and the eventual development of further significant advances in the art."); *see also* Rebecca S. Eisenberg & Arti K. Rai, *Harnessing and Sharing the Benefits of State-Sponsored Research: Intellectual Property Rights and Data Sharing in California's Stem Cell Initiative*, 21 Berkeley Tech. L.J. 1187, 1194-95 (2006). Section 102(b) encourages prompt disclosure of new inventions and in particular limits commercial exploitation of an invention prior to filing for a patent application. Timothy R. Holbrook, *The More Things Change, The More They Stay The Same: Implications of Pfaff v. Wells Electronics, Inc. and the Quest for Predictability in the On-Sale Bar*, 15 Berkeley Tech. L.J. 933, 938 (2000). The issue presented in this case is whether the invention must be ready for patenting at the time the alleged offer is made. We conclude that it does not. Under *Pfaff*, the invention must be ready for patenting prior to the critical date. But to conclude that it must also be ready for patenting at the time of the offer would render the second prong of the *Pfaff* test superfluous. Our decision in *Robotic Vision Sys. v. View Eng'g, Inc.*, 249 F.3d 1307, 1313 (Fed. Cir. 2001) expressly holds that completion of the invention prior to the critical date pursuant to an offer to sell would create a bar. As we explained in *Robotic Vision*, the on-sale bar was "triggered by a prior commercial offer for sale and a subsequent enabling disclosure that demonstrated that the invention was ready for patenting prior to the critical date." *Id.* (emphasis in original). *Robotic Vision* would have to be overturned for us to hold, as the district court did, that the invention must

be ready for patenting at the time of the offer for sale.[5] This we cannot do. While the invention need not be ready for patenting at the time of the offer, consistent with our cases, we hold that there is no offer for sale until such time as the invention is conceived. *Pfaff* states that the "word 'invention' in the Patent Act unquestionably refers to the inventor's conception." 525 U.S. at 60. Therefore, we conclude that an invention cannot be offered for sale until its conception date. Hence, if an offer for sale is made and retracted prior to conception, there has been no offer for sale of the invention. In contrast, if an offer for sale is extended and remains open, a subsequent conception will cause it to become an offer for sale of the invention as of the conception date. In such a case, the seller is offering to sell *the invention* once he has conceived of it. Before that time, he was merely offering to sell an idea for a product. As our court explained in *Sparton Corp. v. United States*, 399 F.3d 1321, 1324 (Fed. Cir. 2005): "Under the Claims Court's analysis, the patented single part release plate was the subject of a commercial offer for sale before it was even conceived. Such a result is illogical." Sparton entered a contract with the Navy to sell sonobuoys incorporating dual-depth operating capability into an existing SSQ-53 design. *Id.* at 1323. There was no dispute that the product which was the subject of the contract was *not* the patented invention – the specified release plate was a different design than the patented release plate. *Id.* The fact that the patented release plates were ultimately included in the delivered devices after the critical date does not change the result.

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[5] August Tech argues that our decisions in *Atlanta Attachment Co. v. Legget & Platt, Inc.*, 516 F.3d 1361 (Fed. Circ. 2008) and *Allen Engineering Corp. v. Bartell Industries*, 299 F.3d 1355 (Fed. Cir. 2002) stand for the proposition that an invention must be ready for patenting at the time of the offer for sale. We do not read those cases as establishing such a requirement.

Sparton offered and contracted to sell the Navy something entirely different than the patented design. Sparton failed to establish the first prong of the *Pfaff* test – offer for sale of the invention.

In this case, August Tech was approached by ICS to develop a wafer inspection machine that would meet their needs. J.A. 4845. In late 1996, with "a concept of what the machine would be," August Tech issued ICS and a second customer, Eastman Kodak, separate purchase orders for a NSX-80 automated wafer inspection machine. J.A. 4982. ICS agreed to pay 15% of the purchase price on order, 20% on design review, 50% upon acceptance at August Tech's factory, and 15% after acceptance at the ICS's site. J.A. 4866, 5029, 14494, 14498. Once it received an initial payment, August Tech began preliminary hardware design for the NSX-80 in the first quarter of 1997. J.A. 4866, 4872. Design and development proceeded at August Tech's facilities, and the first NSX-80 unit was shipped to ICS for on-site acceptance in September of 1997, after the July 15, 1997 critical date. J.A. 4867-77, 14500. August Tech argues that at the time of the contracting "August had not conceived of the software or hardware components that would be necessary for the machine." Appellee's Br. 58. While August Tech admits that there was a partial prototype prior to the critical date, the record on appeal is not clear as to whether August Tech had conceived of the NSX-80 prior to the critical date. And we believe this question of fact must be decided by the fact finder in the first instance with a proper statement of the law regarding the first prong of the *Pfaff* test.

As an alternative ground for affirmance of this issue, August Tech argues that even if Jury Instruction 23 is incorrect, the jury could have arrived at its determination that the NSX-80 was not on sale for purposes of § 102(b)

based on the experimental use exception. Even if there is substantial evidence to support a determination of experimental use (a decision we do not reach), we could not affirm on this basis in light of the error in the jury instruction. The special verdict form asked the jury: "Has Camtek proven by clear and convincing evidence that August's NSX-80 was 'on sale' before July 15, 1997?" J.A. 18. The jury answered NO. We do not know upon which basis the jury made its decision. The jury may well have rejected August Tech's arguments regarding experimental use, but agreed that the invention was not ready for patenting at the time of the offer. Because we cannot peek inside the black box, we cannot affirm even if there is substantial evidence to support this alternative argument.

Even if the NSX-80 was on sale, however, it does not disclose the claimed strobing and therefore does not supply the missing element for purposes of the obviousness analysis. As discussed above, substantial evidence supports the jury's implied factual determination that Chau and Moriya failed to teach the claims' strobing elements. Camtek does not argue that the NSX-80 teaches this feature. Indeed, it is undisputed that NSX-80 units are non-strobing, start-and-stop inspection machines. *See* Appellant's Br. 16 ("[T]he NSX-80 . . . was a start-and-stop system for inspecting patterned wafers that did *not* use strobing." (citing J.A. 4980:14-16)). Thus, we conclude that even if the jury were to decide that the NSX-80 was on sale and therefore prior art, as a matter of law based on the undisputed facts, it would not render the asserted claims obvious in view of the other cited prior art, including Chau, Moriya, and Sandland. Accordingly, we affirm the court's denial of JMOL and a new trial on invalidity for obviousness – there is no need for a retrial on the issue of whether the NSX-80 was on sale.

For the same reasons, the NSX-80 is not material prior art. *Therasense, Inc. v. Becton, Dickinson & Co.*, __ F.3d __, 2011 WL 2028255 at *11 (Fed. Cir. May 25, 2011) (requiring but-for materiality or egregious misconduct). Accordingly, we affirm the district court's dismissal of Camtek's inequitable conduct counterclaim.

IV. Remedies

Because we vacate and remand for further proceedings under the correct claim construction, we do not reach the parties' contentions regarding damages and the injunction. We note, however, that after the district court enjoined Camtek from communicating with third parties in the United States for the purpose of offering to sell accused devices for use outside the United States, we issued *Transocean Offshore Deepwater Drilling, Inc. v. Maersk Contractors USA, Inc.*, 617 F.3d 1296, 1309 (Fed. Cir. 2010). We have no opinion at this time regarding the effect of *Transocean* on the now-vacated injunction. Should the trial court find that Camtek and its Falcon inspection machine infringe under our claim construction, however, it should take into account the effect, if any, *Transocean* has when crafting an appropriate injunction.

CONCLUSION

For the foregoing reasons, we affirm-in-part, vacate-in-part, and remand for further proceedings consistent with this opinion.

AFFIRMED-IN-PART, VACATED-IN-PART, and REMANDED

COSTS

No costs.