United States Court of Appeals for the Federal Circuit

2007-1554

ASYST TECHNOLOGIES, INC.,

Plaintiff-Appellant,

v.

EMTRAK, INC., JENOPTIK AG,
JENOPTIK INFAB, INC., and MEISSNER + WURST GmbH,

Defendants-Appellees.

Darryl M. Woo, Fenwick & West, LLP, of San Francisco, California, argued for plaintiff-appellant. With him on the brief were Michael J. Sacksteder, and David D. Schumann; and Joseph S. Belichick, Fenwick & West, LLP, of Mountain View, California.

Daniel T. Shvodian, Howrey LLP, of East Palo Alto, California, argued for defendants-appellees. With him on the brief were James A. Valentine; and Floyd R. Nation and Richard L. Stanley, of Houston, Texas.

Appealed from: United States District Court for the Northern District of California

Judge Jeremy Fogel

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Appeal from the United States District Court for the Northern District of California in case no. 98-CV-20451, Judge Jeremy Fogel.

DECIDED: October 10, 2008

Before MICHEL, Chief Judge, NEWMAN, and BRYSON, Circuit Judges.

BRYSON, Circuit Judge.

Asyst Technologies, Inc., is the assignee of U.S. Patent No. 5,097,421 ("the '421 patent"), entitled "Intelligent Wafer Carrier." The patent claims a system for tracking articles, such as silicon semiconductor wafers, in a manufacturing facility in which the wafers must be processed sequentially at a number of processing stations. The disclosed system includes transportable containers, or "pods," which contain wafers that are to be transported between different manufacturing stations and allow the wafers to be maintained in a clean environment. The pods contain means for storing data regarding the status of the wafers in the pod, and the system features a means for

transmitting data from the processing station to the pod and a means, located on the pod, for receiving data. The communication and storage means, which are connected to a central control unit, enable the system to detect the status of the wafers in each pod in the course of the manufacturing process, so that the proper fabricating steps can be followed in the proper order. '421 patent, col. 1, ll. 46-54. See Asyst Techs., Inc. v. Emtrak, Inc., 268 F.3d 1364, 1366 (Fed. Cir. 2001) ("Asyst I").

Asyst sued Jenoptik AG and other parties (collectively, "Jenoptik") in the United States District Court for the Northern District of California, charging Jenoptik with infringing the '421 patent and another Asyst-owned patent, U.S. Patent No. 4,974,166 ("the '166 patent"). The trial court first granted summary judgment of no infringement as to three of the asserted claims because the accused device lacked a simple communication means; the court ruled that the other asserted independent claims were not infringed because the accused device lacked structure corresponding to the "means for sensing." Asyst I, 268 F.3d at 1369. On the first appeal, this court reversed the grant of summary judgment, holding that the trial court had erred in its claim construction. Asyst I, 268 F.3d at 1370-71, 1373, 1374.

On remand, the district court again granted summary judgment of non-infringement as to the claims of the '421 patent and dismissed the claims of infringement of the '166 patent pursuant to the parties' agreement. Asyst Techs., Inc. v. Emtrak, Inc., 2003 U.S. Dist. LEXIS 26418 (N.D. Cal. Oct. 8, 2003). On appeal, this court affirmed the grant of summary judgment of no infringement of independent claim 1 of the '421 patent but reversed and remanded with respect to independent claim 2 and

dependent claims 11-14. Asyst Techs., Inc. v. Emtrak, Inc., 402 F.3d 1188, 1189 (Fed. Cir. 2005) ("Asyst II").

On the second remand, the court ruled on summary judgment that claims 2 and 11-14 of the '421 patent are invalid for double patenting over claim 8 of the '166 patent. After Asyst filed a terminal disclaimer to overcome the double patenting problem, the case proceeded to trial. At the end of trial, the jury found claims 2 and 11-14 of the '421 patent valid and infringed. Jenoptik then moved for judgment as a matter of law ("JMOL") that the asserted claims were invalid due to obviousness, or alternatively for a new trial. After initial briefing on the JMOL motion, the Supreme Court decided KSR Int'l Co. v. Teleflex Inc., 127 S. Ct. 1727 (2007), and the trial court thereafter allowed additional briefing based on that decision. The trial court then granted JMOL of obviousness, in view of U.S. Patent No. 4,588,880 to Hesser, based in part on KSR. The trial court also conditionally granted a new trial in the event that we should reverse the grant of JMOL.

I

Although the jury concluded that the asserted claims were not invalid for obviousness in light of Hesser, the jury's verdict on that issue was plainly affected by its conclusion, expressed in the special verdict form, that Hesser was not relevant prior art. The district court's JMOL order was predicated on the court's ruling that the jury was wrong in finding that Hesser was not pertinent prior art. We agree with the district court on that issue. Hesser is clearly pertinent to the art of tracking workpieces during multiple fabrication steps in a factory, the art to which the '421 patent is directed. In fact, when Asyst's technical expert was asked whether the relevant prior art "would

include the Hesser patent," he responded, "Yes." In light of that admission and the clear relevance of Hesser to the pertinent art, we hold that the jury was wrong in concluding that Hesser is not relevant prior art and that the jury's verdict is fundamentally undermined by that erroneous conclusion.

Asyst does not vigorously dispute the district court's conclusion as to the status of Hesser as relevant prior art. Rather, Asyst devotes most of its energy on appeal to arguing that even assuming Hesser is pertinent art, the district court erred in granting JMOL on obviousness because there was substantial evidence that Hesser lacks both a "sensing means for sensing the presence of at least one transportable container" and a "selection means for selecting between respective sensor means of said plurality," both of which are limitations of claim 2 and its dependent claims. Asyst also argues that Jenoptik failed to show any motivation to combine Hesser with any of the other prior art references and that the jury's findings with respect to the objective indicia of nonobviousness were sufficient to support a judgment in Asyst's favor on that issue.

A

We have dealt with the means for sensing in both of the prior appeals in this case. In our prior opinions, we concluded that the communication means through which the system transferred data between the transportable container and the processing station was the structure that corresponded to the sensing means. Asyst II, 402 F.3d at 1196-97. The trial court correctly noted that the Hesser patent disclosed the same structure:

> It is undisputed that Hesser discloses that the information carrier on the transportable container and the read-write transducer station can communicate optically by use of an LED and a photosensitive diode or transistor. There also is no dispute that when the read-write transducer

> station receives a communication from the information carrier on the transportable container, it necessarily senses the presence of the transportable container.

Asyst's expert, Dr. Faillace, effectively admitted that Hesser disclosed the sensing means. When asked if the infrared LEDs in Hesser were capable of performing the sensing function, Dr. Faillace replied, "Hesser discloses, almost by incidental means, a section that could be interpreted as sensing the presence of the information carrier. He certainly discloses transmitting information by optical means." In light of that admission and in view of the similarity between the communication structure disclosed by Hesser and the communication structure disclosed in the '421 patent, we agree with the trial court that "any implicit finding by the jury that Hesser does not meet the 'sensing means' limitation of the '421 claims is necessarily incorrect."

Hesser describes a system using an "information carrier" tag on the workpiece containers in which digital information could be stored, read, and updated. The tag described in one embodiment of Hesser is an electronic memory unit that contains both memory and two-way communication means for non-contact communication with the processing stations. In that embodiment, the tag communicates with the processing station through light-emitting diodes and phototransistors. In another embodiment, Hesser discloses a tag that includes a microprocessor that communicates with the processing station through an induction coil. The processing stations in Hesser communicate with a central control unit computer by way of a bus, which routes communications to every device to which it is connected. Hesser discloses that its system can be used in an assembly line or in a flexible production system in which the workpieces do not follow a single, predetermined course of fabrication steps.

The ’421 patent discloses essentially the same structure, including the use of a microprocessor on the transportable pod, which contains updatable information about the status of the wafer within the pod, a means for communicating information between the processing station and the pod, such as an optical communication system (a light-emitting diode and phototransistor) or an induction coil, and a means for communication between the central control unit and the processing stations. Thus, the only material difference between Hesser and the invention recited in claim 2 of the ’421 patent is that Hesser discloses that the communications between the processing stations and the central control unit are carried over a bus, while the ’421 patent discloses that those communications are conducted by way of a multiplexer that selectively directs communications to the particular processing unit to which a particular communication is addressed.

B

Asyst argues that because Hesser discloses the use of an information bus instead of a multiplexer for communications between the control unit and the transportable containers, it does not have any structure that performs “selection” among the containers, but instead indiscriminately transmits information through the bus to all of the transducer stations. Therefore, Asyst argues that in its validity analysis, the district court ignored the recited function of the asserted claims that requires “selecting between respective sensor means of said plurality.” Asyst adds that the use of a multiplexer is not simply a design choice, but that it saves battery life on the transportable containers because the multiplexer causes the control unit to communicate with only a single container at a time, so that only that particular container

uses battery power to receive the message. According to Asyst, sending a broadcast message over a bus "needlessly drain[s] the batteries of all tags but the intended recipient of the message."

Jenoptik responds that multiplexers were well known in the art at the time of the '421 patent, and that assertion appears to be undisputed. Indeed, both experts agreed that a person of skill in the art would be familiar with multiplexers and how to use them. In addition, Jenoptik argues that replacing the bus recited in Hesser with a multiplexer is little more than "the simple substitution of one known element for another," KSR, 127 S. Ct. at 1740, and thus the use of a multiplexer instead of a bus does not render the invention of the '421 patent nonobvious. We agree. As the Supreme Court explained in KSR, "[I]f a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill." 127 S. Ct. at 1740.

The parties do not seem to dispute that, as the trial court held, the two alternative means of connecting the transducer stations are buses and multiplexers and that those alternatives have long been known and understood by persons of ordinary skill in the art. Asyst has not suggested that the multiplexer in its system operates in any way other than its conventional manner or that replacing a bus with a multiplexer would be an operation that would not be familiar to anyone of skill in the art. We therefore agree with the district court that it would have been obvious to a person of ordinary skill in the art to replace the bus in Hesser with a multiplexer in order to obtain the invention of the '421 patent.

Although the jury found that a person of skill in the art would not have been motivated to combine the system of Hesser with a multiplexer in place of a bus, we agree with the district court that the jury's finding is not supported by substantial evidence. At trial, Jenoptik introduced evidence regarding the well-known respective advantages of a multiplexer and a bus in connecting electronic system components and the circumstances in which one of ordinary skill would have selected one of the two devices over the other. That evidence showed that the choice between the two devices was a familiar one that was based on well-known considerations. For example, two prior art publications that were in evidence explained that for long distance communication and simplicity of installation, a system would be improved by use of a multiplexer. Indeed, Asyst's expert admitted that such factors would be considered in deciding whether to use a multiplexer or a bus. In light of that evidence, the district court was correct to hold the jury's contrary finding unsupported. See Muniauction, Inc. v. Thompson Corp., 532 F.3d 1318, 1325-27 (Fed. Cir. 2008); Agrizap, Inc. v. Woodstream Corp., 520 F.3d 1337, 1343-44 (Fed. Cir. 2008); In re Translogic Tech., Inc., 504 F.3d 1249, 1261-62 (Fed. Cir. 2007).

Asyst argues that the saving of battery life in its system, which uses a multiplexer, as compared to the Hesser system, which uses a bus, is an "unexpected result" that renders the asserted claims nonobvious. Jenoptik disputes Asyst's contention that its system actually saves battery life, and Jenoptik's expert explained at trial why Asyst's claim that its system saved battery life was incorrect.[1] Even assuming

[1] The basis for Asyst's theory that its system would save battery life on the pods was that a multiplexer directs messages to a particular receiver, while a bus

that using a multiplexer in the context of the claimed invention would actually save battery life, however, the advantages and disadvantages of using a multiplexer, which communicates with only a single target transducer station at a time, were well understood at the time of the '421 patent application. As such, we do not view the battery-saving advantage, even if it applies to the invention of the '421 patent, as indicative that the use of a multiplexer rendered the invention nonobvious.

Asyst also argues that the jury found objective indicia of nonobviousness—commercial success, long-felt need, and industry praise—and that the trial court was wrong to discount those findings. The trial court concluded that Asyst failed to link the objective indicia to the claimed invention and that Asyst's evidence "lacks a nexus to any part of the [commercial embodiment] that is not disclosed in Hesser."

In In re Grasselli, 713 F.2d 731, 743 (Fed. Cir. 1983), this court stated that "objective evidence of non-obviousness must be commensurate in scope with the claims which the evidence is offered to support." See also Ormco Corp. v. Align Tech., Inc., 463 F.3d 1299, 1312 (Fed. Cir. 2006); Richdel, Inc. v. Sunspool Corp., 714 F.2d 1573, 1580 (Fed. Cir. 1983). Therefore, even though commercial embodiments of the '421 invention may have enjoyed commercial success, Asyst's failure to link that commercial success to the features of its invention that were not disclosed in Hesser undermines the probative force of the evidence pertaining to the success of Asyst's and

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directs messages to all receivers on the system, thus requiring that all of the receivers be energized, including those to which a particular message is not directed. Jenoptik's expert explained that the use of a bus in such a system would not expend battery life on the pods, because if a particular message from the control unit was not intended for a particular processing station, the processing station would not initiate a communication with the pod and thus would not trigger the use of the battery on the pod.

Jenoptik's products. See J.T. Eaton & Co. v. Atl. Paste & Glue Co., 106 F.3d 1563, 1571 (Fed. Cir. 1997) ("asserted commercial success of the product must be due to the merits of the claimed invention beyond what was readily available in the prior art").

The same flaw attends Asyst's reliance on the evidence of long-felt need for the invention and the evidence of industry praise. While the evidence shows that the overall system drew praise as a solution to a felt need, there was no evidence that the success of the commercial embodiment of the '421 patent was attributable to the substitution of a multiplexer for a bus, which was the only material difference between Hesser and the patented invention. Rather, the evidence to which Asyst points relates only to the disadvantages of using static identification systems, such as bar codes, to identify workpieces in the process of fabrication, a problem that was overcome by Hesser's disclosure of putting a microprocessor, memory, and communication means on the transportable containers so as to be able to update information about the status of the wafers within the containers. Moreover, as we have often held, evidence of secondary considerations does not always overcome a strong prima facie showing of obviousness. See Pfizer, Inc. v. Apotex, Inc., 480 F.3d 1348, 1372 (Fed. Cir. 2007); Ryko Mfg. Co. v. Nu-Star, Inc., 950 F.2d 714, 719-20 (Fed. Cir. 1991); Newell Cos. v. Kennedy Mfg. Co., 864 F.2d 757, 768 (Fed. Cir. 1988). The secondary consideration evidence in this case does not overcome the strong case of obviousness in the substitution of the multiplexer, a known alternative to Hesser's bus, where the multiplexer operates in a well-known manner.

C

Asyst also argues that the district court erred in invalidating dependent claims 11-14 because "[n]either the court's order nor defendants' JMOL briefing ever mention the additional limitations required by those dependent claims." Asyst, however, has not pointed to any additional limitations in the dependent claims that are not disclosed in Hesser. Jenoptik provided evidence at trial showing how each element of the dependent claims was taught by Hesser. The references to Hesser provided by Jenoptik's expert appear on their face to disclose each of the limitations found in the dependent claims, and Asyst has not pointed to any evidence that it offered in response that would indicate that Hesser does not in fact disclose those additional limitations. Because Asyst has not rebutted Jenoptik's evidence that Hesser teaches each of the additional limitations in the dependent claims, the trial court was justified in overturning the jury verdict as to those claims.

II

As a procedural matter, Asyst argues that the trial court abused its discretion by allowing Jenoptik to "assert new invalidity theories nearly ten years into the lawsuit." In particular, Asyst complains that the court should not have allowed Jenoptik to assert its invalidity defense based on Hesser at this stage of the litigation. Asyst argues that the delay was prejudicial because it had limited time to depose Jenoptik's expert regarding Hesser and because it could not amend its complaint to assert different claims based on the expert's report regarding Hesser. Jenoptik counters that on the second appeal this court "expanded the claim scope" and that "new prior art became potentially relevant to

the validity of those claims." See Johns Hopkins Univ. v. CellPro, Inc., 152 F.3d 1342, 1357 (Fed. Cir. 1988).

We hold that the district court did not abuse its discretion in concluding that the change in claim construction resulting from this court's decision on appeal "changed the rules of the game," CellPro, 152 F.3d at 1357, and that Jenoptik was therefore properly permitted to amend its defenses. Asyst has not made a sufficient showing to warrant reversal on this issue of case management, on which district courts enjoy broad discretion.

The district court found that Jenoptik raised its invalidity defense in a June 3, 2005, case management conference, less than three months after we issued our second opinion in this case. Based on that finding, the trial court ruled that Asyst "had notice as of June 2005 that Jenoptik believed that new prior art would be relevant to the invalidity question." Although Asyst contends that Jenoptik's statements at the conference were "vague and incomplete," the trial court is in the best position to assess what was conveyed by Jenoptik's statements, and we see no reason to overrule the trial court on that issue.

III

Because we have concluded that the asserted claims are invalid for obviousness, we do not address the district court's conditional grant of a new trial or its decision on the double patenting issue.

AFFIRMED.