

NOTE: This disposition is nonprecedential.

**United States Court of Appeals
for the Federal Circuit**

SEMCON TECH, LLC,
Plaintiff-Appellant

v.

MICRON TECHNOLOGY, INC.,
Defendant-Appellee

2015-1936

Appeal from the United States District Court for the District of Delaware in No. 1:12-cv-00532-RGA, Judge Richard G. Andrews.

Decided: August 19, 2016

MARC AARON FENSTER, Russ August & Kabat, Los Angeles, CA, argued for plaintiff-appellant. Also represented by JEFFREY ZHI YANG LIAO, ADAM S. HOFFMAN, PAUL ANTHONY KROEGER.

JARED BOBROW, Weil, Gotshal & Manges LLP, Redwood Shores, CA, argued for defendant-appellee. Also represented by AARON Y. HUANG.

Before PROST, *Chief Judge*, BRYSON and STOLL, *Circuit Judges*.

BRYSON, *Circuit Judge*.

Plaintiff Semcon Tech, LLC, (“Semcon”) appeals from a summary judgment entered in favor of defendant Micron Technology, Inc., (“Micron”) by the United States District Court for the District of Delaware. The district court held that the asserted claims of U.S. Patent No. 7,156,717 (“the ’717 patent”) are invalid as anticipated by U.S. Patent No. 6,010,538 (“Sun”). Because we disagree with the analysis that led the district court to conclude that there is no genuine issue of material fact on the issue of anticipation, we vacate the district court’s summary judgment order and remand for further proceedings.

I

The ’717 patent is directed to methods for finishing semiconductor wafers during manufacture. The methods of the four asserted claims entail carefully reducing the thickness of the wafers by a computer-controlled polishing process that uses pressure and a chemical slurry. The finishing process employs sensors to monitor and adjust the reduction of the thickness of the wafers. When the process reaches a predefined endpoint it stops.

It is undisputed that Sun is a close prior art reference. Like the ’717 patent, the Sun patent describes controlling the finishing of a semiconductor wafer using calculations derived from sensor data. The anticipation dispute focuses on only one limitation of the ’717 patent: “changing a plurality of control parameters in response to an evaluation of both the in situ process information . . . and the

tracked information . . . during at least a portion of the finishing cycle time.”¹

The narrow issue on appeal is whether the district court erred in concluding, on summary judgment, that Sun discloses this limitation of changing the control parameters for the finishing process by using calculations that are based on *both* “tracked information” and “in situ process information,” and that no reasonable finder of fact could conclude otherwise. The district court construed tracked information to mean “pre-polishing information about the wafer being polished that is associated with the wafer,” and found that the initial thickness of the wafer was an example of tracked information. The court construed in situ process information to mean “information that is sensed from the wafer currently undergoing CMP [chemical-mechanical polishing].” Those constructions are not disputed.

The district court found that Sun disclosed this limitation and based its analysis on statements by Micron’s expert, Dr. David Dornfeld. In particular, the court quoted the statement by Dr. Dornfeld in his principal declaration that “Sun discloses that the polishing process can be controlled in real time in response to pre-polish thickness information and information that is sensed from the wafers by sensors before reaching its endpoint.” The court also relied on Dr. Dornfeld’s statement in Micron’s claim chart that “Sun discloses a controller and processor algorithm which, in response to rate information calculated from the initial thickness of the wafer being polished and information detected from sensors, can control the

¹ Although minor variations of this limitation are found among the four asserted claims, Micron acknowledges that claim 1 is representative, and the parties have not argued that the analysis of the anticipation issue differs for any of the asserted claims.

CMP process.” Based on that evidence, the court concluded that Sun disclosed the use of tracked information, i.e., the initial thickness of the wafer, in connection with in situ process information obtained from the sensors, to calculate rate of removal information that is used to change the control parameters during the finishing process. The court thus adopted Dr. Dornfeld’s conclusion that Sun uses the initial thickness of the wafer to calculate the amount of material removed from the wafer during polishing and thus to calculate the rate of removal of the material from the wafer. The rate of removal, Dr. Dornfeld explained, was used to affect the control parameters for the polishing process.

Semcon contends that the district court erred in its finding as to what Sun discloses. According to Semcon, Sun calculates the rate of material removal from the wafer without reference to tracked information (e.g., the wafer’s initial thickness). Instead, Semcon asserts, Sun calculates the rate of removal based exclusively on sensor readings gathered during the polishing process and timing information. As evidence for its interpretation of Sun, Semcon cites portions of the Sun patent and Dr. Dornfeld’s deposition testimony, which purportedly contradicts his declaration. Reviewing that evidence, the district court concluded that Semcon “offers no contrary expert testimony, but instead provides snippets of deposition examination. The snippets do not create a disputed material fact.”

In this appeal we examine whether there is a genuine question that Sun discloses the use of the initial thickness of the wafer in calculating the rate of removal of material from the wafer.

II

Summary judgment is appropriate “if the movant shows that there is no genuine dispute as to any material fact and the movant is entitled to judgment as a matter of

law.” Fed. R. Civ. P. 56(a). There is a genuine dispute of material fact “if the evidence is sufficient for a reasonable factfinder to return a verdict for the nonmoving party.” *Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242, 248 (1986).

A

The district court relied heavily on Dr. Dornfeld’s declaration and his attached claim chart. In particular, the court noted that Dr. Dornfeld referred to column 8, lines 41-67, and Figure 13 from Sun as the basis for his conclusion that Sun discloses using the initial thickness of the wafer in calculating the rate of removal of material from the wafer during the polishing process. In fact, however, the cited portions of Sun do not appear to support Dr. Dornfeld’s characterization.

Earlier portions of column 8 of Sun describe how the initial thickness of the wafer can be used to determine the endpoint of the polishing process based on the wafer’s current thickness. Sun first explains that “[a]t some point T_E , the thickness of the layer has been reduced by a desired amount; that is, an endpoint to the CMP process. This is often all the information that is necessary to control the process and determine its endpoint.”² Sun, col. 8, ll. 13-20. Sun then adds that “[b]y also knowing the starting thickness of the transparent layer, the measured thickness removed is subtracted to determine the remaining thickness of the layer. It is often desired to determine, as an endpoint of the process, when the layer has been reduced to a certain thickness. The CMP process is then stopped.” *Id.*, col. 8, ll. 20-25.

² The Sun specification describes how the amount of material that has been removed during the process is determined from electromagnetic sensor readings without reliance on initial thickness. Sun, col. 7, line 43, through col. 8, line 16; col. 9, line 1, through col. 12, line 64.

Those portions of column 8 of Sun disclose using the wafer's initial thickness to determine the endpoint of the CMP process based on a target remaining thickness, but they do not address the question whether the wafer's initial thickness is used to calculate the rate of removal that is in turn used to control the process before the endpoint is reached.

To the contrary, the Sun specification at lines 41 through 67 of column 8 states that the rate of removal of material from the wafer is determined from "the amount of material measured to have been removed during a certain time interval," Sun, col. 8, ll. 48-49, which in turn is based on sensor information, in particular the interference measurements depicted in Figure 8A of the patent. Sun explains that "[n]o matter what specific condition is designated as the endpoint of the process of removing material from a transparent layer, that process may be controlled in real time, before reaching its endpoint, from the information being received in the form of Fig. 8A." *Id.*, col. 8, ll. 41-45. The rate of material removal is then calculated by measuring the amount of material removed during a certain time interval and dividing that amount by the time elapsed in that interval. *Id.*, col. 8, ll. 45-50. "In response to such rate information, the CMP process may be adjusted until a desired removal rate is obtained and maintained." *Id.*, col. 8, ll. 50-52.

That portion of Sun, which was relied upon by Dr. Dornfeld, does not suggest that the rate of removal is determined by calculating the difference between the current thickness of the wafer and its initial thickness over time. Instead, it suggests that the rate of removal is calculated using only sensor information as to the amount of material removed, together with timing information.

Figure 13 of Sun and the accompanying portion of the Sun specification also do not clearly support Dr. Dorn-

feld's characterization of the Sun reference. The pertinent portion of Figure 13 is set forth below:

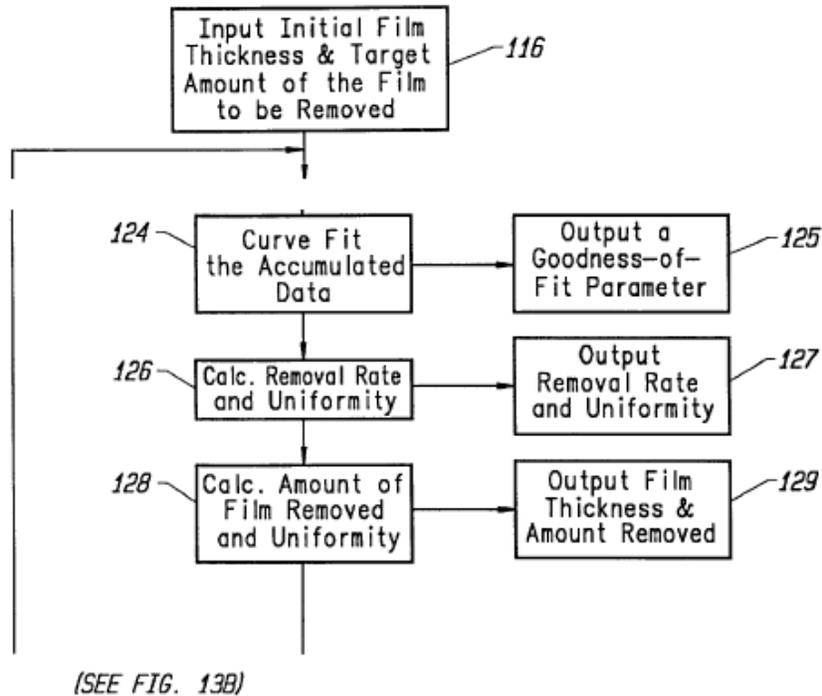


FIG. 13A

According to Dr. Dornfeld, Figure 13 shows that the initial thickness of the wafer is used in calculating the amount of material removed from the wafer, and in turn the rate of removal of material. Dr. Dornfeld asserted that along with “in situ process information” from the sensors, the rate information is used to change the control parameters in the CMP process.

Dr. Dornfeld’s theory, however, appears to be at odds with the description of the claimed methods in the portion of the specification that addresses Figure 13.

The specification states that Figure 13 illustrates a processing algorithm that is used to determine “when a

process of reducing the thickness of the transparent layer **48** . . . has reached an endpoint T_E .” *Id.*, col. 13, line 66, through col. 14, line 3. One item that can be input in the first step of the algorithm, identified as step **116**, is “the initial thickness of the film **48**, which can be determined by measurement or ascertained from the parameters of the process used to form the layer.³ As the specification explains, “[i]f the initial film thickness was inputted by the operator in the step **116**, the step **128** also calculates and outputs the remaining thickness of the film at the location of each of the sensor units.” *Id.*, col. 14, ll. 50-55. Thus, Sun discloses that initial thickness information can be used to determine when the process endpoint has been reached, but it does not clearly disclose that initial thickness information is used to calculate the rate at which material is removed from the wafers, which in turn results in changing the control parameters in the polishing process.

Instead, the calculation of the removal rate at step **126**, according to the Sun specification, is performed by using data from the sensing units together with timing information. That data can be used to calculate the amount of material that has been removed from the wafer and thus the rate of removal of material. Sun, col. 14, ll. 12-45. The specification explains that in step **128** of Figure 13, “the thickness of material that has been removed from the layer **48** is determined by multiplying the removal rate determined in the step **126** by the amount of time that has elapsed during the process.” *Id.*, col. 14, ll. 46-49.

Thus, contrary to Dr. Dornfeld’s assertion that “rate information [is] calculated from the initial thickness of

³ Sun makes clear that the film is the top layer of the wafer that is planarized during the CMP process. Sun, col. 7, ll. 41-52.

the wafer being polished,” that portion of the Sun specification does not state that the initial thickness of the film is used in calculating the removal rate of material from the film, but rather that the removal rate is determined based on data from the sensing units.

Semcon also contends that Dr. Dornfeld’s deposition contradicts the portions of his declaration on which the district court relied. In his deposition, Dr. Dornfeld agreed that determining the rate of removal of material referred to in Sun “does not require a comparison to the initial thickness” of the wafer, and that the rate of removal “is calculated without reference to the initial thickness.” Those statements are, at minimum, in tension with Dr. Dornfeld’s assertion that Sun discloses that rate information is “calculated from the initial thickness of the wafer being polished.” While it may be possible to reconcile Dr. Dornfeld’s deposition testimony with his declaration, the district court did not offer an explanation for the apparent inconsistency, and we conclude that the inconsistency between the two is a relevant factor bearing on whether it was appropriate for the district court to grant summary judgment based on Dr. Dornfeld’s declaration.⁴

⁴ Micron submitted a reply declaration by Dr. Dornfeld following his deposition, in which he sought to reconcile his deposition testimony with his characterizations of the Sun reference. While Dr. Dornfeld’s reply declaration reasserts that the removal rate in Sun is calculated based in part on the initial thickness of the wafer, a reasonable finder of fact could conclude that Dr. Dornfeld’s reply declaration failed to rebut Semcon’s characterization of column 8 of Sun, and could instead credit Dr. Dornfeld’s admissions during his deposition that “the rate of material removal does not require a comparison to the initial thickness” and that “rate is calculated without reference to the initial thickness.”

B

The law requires that in a summary judgment motion all justifiable inferences be drawn in the nonmovant's favor. *Anderson*, 477 U.S. at 255. Based on the portions of the Sun specification cited above, a reasonable factfinder could conclude that Sun does not disclose using both the initial thickness of the wafer and sensor information to calculate rate information. For that reason, a reasonable factfinder could conclude that Sun does not disclose the '717 patent's limitation of controlling the process "in response to an evaluation of both [sensor information] and the tracked information."

The fact that Semcon offered no contrary expert testimony directed to the issue of anticipation does not justify the issuance of summary judgment. Through its textual arguments regarding the Sun reference and its reliance on the apparent inconsistencies between Dr. Dornfeld's deposition testimony and his declaration, Semcon showed why a reasonable finder of fact might disagree with Dr. Dornfeld's anticipation analysis.

That is all that is required on the part of the nonmoving party in opposing a summary judgment motion on an issue as to which the moving party has the burden of proof, as Micron does here. See *Exigent Tech., Inc. v. Atrana Solutions, Inc.*, 442 F.3d 1301, 1307 (Fed. Cir. 2006); *Saab Cars USA, Inc. v. United States*, 434 F.3d 1359, 1368 (Fed. Cir. 2006) (quoting James Wm. Moore et al., *Moore's Federal Practice* ¶ 56.13[1] (3d ed. 2005)) ("[I]f the motion is brought by a party with the ultimate burden of proof, the movant must still satisfy its burden by showing that it is entitled to judgment as a matter of law even in the absence of an adequate response by the non-movant."); *Lencco Racing Co. v. Joliffe*, 215 F.3d 1341, 1999 WL 506857, at *4 (Fed. Cir. 1999) ("When the movant bears the burden of proof . . . summary judgment cannot be granted unless the movant makes a showing on

each required element and the nonmovant's response fails to raise a genuine issue of material fact as to any element.”).

This court's law on that issue is consistent with the law in other courts. *See, e.g., Bailey v. McDonnell Douglas Corp.*, 989 F.2d 794, 802 (5th Cir. 1993) (“Where, as here, the *moving party* [will bear] the burden of proof at trial, it must come forward with evidence [on summary judgment] which would entitle it to a directed verdict if the evidence went uncontroverted at trial. . . . In this situation, only *after* the moving party meets this burden must the non-moving party produce its ‘significant, probative evidence.’”) (quoting *Int'l Shortstop, Inc. v. Rally's, Inc.*, 939 F.2d 1257, 1264-65 (5th Cir. 1991), and *Chanel, Inc. v. Italian Activewear of Fla., Inc.*, 931 F.2d 1472, 1477 (11th Cir. 1991)); *Resolution Trust Corp. v. Gill*, 960 F.2d 336, 340 (3d Cir. 1992) (“[W]here the movant bears the burden of proof at trial and the motion does not establish the absence of a genuine factual issue, the district court should deny summary judgment even if no opposing evidentiary matter is presented.”); *Houghton v. South*, 965 F.2d 1532, 1536-37 (9th Cir. 1992).

C

Micron argues that the district court's summary judgment order can be sustained on several alternative grounds. The alternative grounds, however, depend on a reference not relied upon by the district court and on a claim construction issue not addressed by the district court. They are therefore not ripe as grounds for this court to sustain the district court's summary judgment order.

Micron's first proposed alternative ground for affirmance is that U.S. Patent No. 5,499,733 (“Litvak”), which was incorporated by reference in the Sun patent, anticipates the asserted claims of the '717 patent. The district court, however, did not rely on, or even discuss, Litvak in

the portion of its summary judgment order addressing the relevant limitations.⁵ Because the district court did not rely on Litvak, we decline to reach the question whether Litvak could serve as an alternative ground for upholding the district court's order.

Micron also argues that the district court's anticipation judgment can be upheld on the theory that "tracked information" includes not only the initial thickness of the wafer, but also the target amount of film to be removed. The target amount of film to be removed, according to Micron, is used in the Sun process to control the CMP process, thus establishing that Sun anticipates the asserted claims of the '717 patent.

Again, the district court did not rely on that theory as a basis for its anticipation analysis and did not find in its summary judgment order that the term tracked information included the target amount of film to be removed.⁶ In the absence of analysis of the "target amount" theory by the district court, we do not address whether that theory could support a summary judgment of anticipation. As in the case of the Litvak reference, the district court may consider on remand whether that theory provides a basis for anticipation.

⁵ The court addressed Litvak only in the portion of its summary judgment opinion discussing the uniform region limitations found in claims 37 and 56.

⁶ The district court's only reference to the amount of film to be removed is in the court's statement that Figure 13A "begins with 'Input Initial Film Thickness & Target Amount of Film to be Removed.'" This direct quotation of the contents of the first box of Figure 13A was not presented as a construction of the term "tracked information." Instead, when referring to tracked information, the court consistently referred to the initial thickness of the film.

III

After entering summary judgment of anticipation in favor of Micron, the court denied Semcon's motion for summary judgment of no anticipation as moot. Semcon now argues that, in addition to reversing the summary judgment in favor of Micron, this court should reverse the district court's denial of Semcon's motion for summary judgment of no anticipation and direct the district court to enter summary judgment on that issue in Semcon's favor. We decline to do so.

The denial of a motion for summary judgment is not a "final decision" of a district court, 28 U.S.C. § 1295(a)(1), and therefore is not ordinarily appealable. *Plantronics, Inc. v. Aliph, Inc.*, 724 F.3d 1343, 1357 (Fed. Cir. 2013); *M. Eagles Tool Warehouse, Inc. v. Fisher Tooling Co.*, 439 F.3d 1335, 1344 (Fed. Cir. 2006); *Lermer Germany GmbH v. Lermer Corp.*, 94 F.3d 1575, 1576 (Fed. Cir. 1996). As the Supreme Court has explained, appellate courts lack jurisdiction over the denial of a motion for summary judgment based on disputed issues of fact because such a denial "does not settle or even tentatively decide anything about the merits of the claim." *Switz. Cheese Ass'n, Inc. v. E. Horne's Mkt., Inc.*, 385 U.S. 23, 25 (1966); *see also Advanced Software Design Corp. v. Fiserv, Inc.*, 641 F.3d 1368, 1381-82 (Fed. Cir. 2011).

Nor does the doctrine of pendent appellate jurisdiction apply here. That doctrine is reserved for "only the most extraordinary circumstances," *Falana v. Kent State Univ.*, 669 F.3d 1349, 1360 (Fed. Cir. 2012), such as where the pendent issue is "inextricably intertwined" with the principal issue before the court such that it is necessary to review both to ensure meaningful review. *See Swint v. Chambers Cty. Comm'n*, 514 U.S. 35, 50-51 (1995); *Entegris, Inc. v. Pall Corp.*, 490 F.3d 1340, 1348 (Fed. Cir. 2007). The issue we have decided—that a reasonable finder of fact could find against Micron on the issue of

anticipation—is separate from the question Semcon wishes us to decide—whether a reasonable finder of fact could only decide in favor of Semcon on the issue of anticipation.

This court has declined to exercise pendent appellate jurisdiction in cases indistinguishable from this one, where the court has reversed the grant of summary judgment for the appellee, but has declined to address a request that the court reverse the denial of the appellant's motion for summary judgment. *See, e.g., Advanced Fiber Techs. Trust v. J&L Fiber Servs., Inc.*, 674 F.3d 1365, 1377 (Fed. Cir. 2012).

Although it is within our authority under 28 U.S.C. § 2106 to direct the entry of summary judgment in Semcon's favor on remand, we decline to do so. *See Conoco Inc. v. Dep't of Energy*, 99 F.3d 387, 394-95 (Fed. Cir. 1996). The district court did not rule on the merits of Semcon's motion, but merely dismissed it as moot in light of the court's ruling on Micron's motion. Under these circumstances, it would be inappropriate for this court to go beyond the scope of the final order of invalidity entered by the district court and adjudicate issues not squarely decided by that court in an appealable final judgment. *See id.* at 395 (“[D]irecting summary judgment for the appellant is appropriate only if appellate court is ‘quite certain that no further exploration of the facts is in order.’”) (quoting 6 James Wm. Moore et al., *Moore's Federal Practice* ¶56.13, at 56-179 (1996 ed.)).

IV

We vacate the summary judgment of invalidity and remand for further proceedings consistent with this opinion. We decline Semcon's request that we direct the district court to enter summary judgment of invalidity in Semcon's favor.

VACATED AND REMANDED