NOTE: This disposition is nonprecedential.

United States Court of Appeals for the Federal Circuit

DOMINION ENERGY, INC., fka Dominion Resources, Inc., VIRGINIA ELECTRIC AND POWER COMPANY,
Plaintiffs-Appellees

v.

ALSTOM GRID LLC,
Defendant-Appellant

2017-1158

Appeal from the United States District Court for the Eastern District of Pennsylvania in No. 2:15-cv-00224-MAK, Judge Mark A. Kearney.

Decided: March 15, 2018

JEFFREY K. SHERWOOD, Blank Rome LLP, Washington, DC, argued for plaintiffs-appellees. Also represented by DANIEL G. CARDY, SALVATORE P. TAMBURO.

RICHARD L. RAINEY, Covington & Burling LLP, Washington, DC, argued for defendant-appellant. Also represented by BRIAN GERARD BIELUCH, ROBERT JASON FOWLER, ALI MOJIBI YAZDI.

Before MOORE, HUGHES, and STOLL, *Circuit Judges*.

STOLL, *Circuit Judge*.

This is an appeal from a final judgment following a jury trial in a patent infringement case. Alstom Grid LLC ("Alstom Grid") appeals the district court's (1) denial of judgment as a matter of law ("JMOL") of noninfringement, (2) denial of its motion to vacate or remit the jury's reasonable royalty damages award, (3) denial of JMOL of no willful infringement and grant of enhanced damages, and (4) grant of a permanent injunction. For the reasons explained below, we reverse the district court's denial of JMOL of noninfringement based on an absence of substantial evidence to support the jury verdict. For that reason, we vacate the damages award, judgment of willful infringement, enhanced damages award, and permanent injunction. We remand for further proceedings consistent with this opinion.

BACKGROUND

Dominion Energy, Inc. and Virginia Electric and Power Company (collectively, "Dominion") own U.S. Patent No. 8,437,883, which claims a voltage control and conservation system configured to monitor energy usage at the energy delivery system and determine one or more energy delivery parameters at the energy control system. Dominion filed an infringement suit alleging that Alstom Grid infringed the '883 patent by "willfully supply[ing], provid[ing] instructions and training relating to, and configur[ing] systems with Alstom's . . . LVM module control systems" for third-party user Duke Energy Corp. ("Duke"). J.A. 1251 ¶ 33.

I.

In an effort to increase energy efficiency, electric utilities have been replacing the old "spinning wheel" meters

outside our homes with smart meters. Smart meters generate advanced metering infrastructure data ("AMI"), which is sent remotely to the electric utilities to assist in (1) managing power output and (2) more accurately billing the consumer for actual usage. AMI is now referred to as the combination of smart meters with two-way communications technology for information, monitoring, and control. In other words, AMI is the protocol used by smart meters to allow the utility to receive real-time measurements, including voltages, currents, and power flows, from various components on the grid. The utility can also regulate the voltage at different points on the grid using AMI protocol by issuing control commands that raise or lower the voltage at those points.

One way to increase energy efficiency is to optimize the electric grid to reduce energy lost along the electric lines, known as conservation voltage reduction ("CVR"). CVR optimizes voltage on the lines that run from the electric power substations to homes and businesses. As electricity is distributed throughout the grid, the voltage at each user location drops as it gets further away from the distribution location. Utilities seek to keep voltages at customers' locations within a target voltage band (114–125 volts), but preferably at the lower end of the band, allowing utilities to conserve voltage. Utilities do this by applying CVR techniques.

II.

Dominion's '883 patent is directed to controlling components in a power distribution system using sensors at multiple distribution locations. According to Dominion's complaint, the '883 patent enables a power utility to produce less power to satisfy its customers' needs. Specifically, the '883 patent claims a voltage conservation and control system that uses voltage measurements and exception reports (that is, a warning that the measured voltage is outside of the target voltage band) from smart

meters to control the voltage supply at a substation or other distribution location.

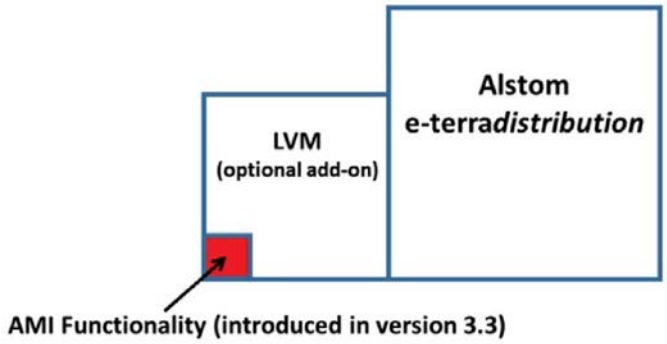
Dominion asserts independent claim 1, which reads:

> 1. A voltage control and energy conservation system for an electric power transmission and distribution grid configured to supply electric power to a plurality of user locations, the system comprising . . . a voltage controller configured to receive measurement data from each sensor of a subset of the plurality of sensors, wherein the subset includes more than one and substantially fewer than all of the plurality of sensors, and to *generate an energy delivery parameter based on a comparison of the measurement data received from the subset to a controller target voltage band* . . . .

'883 patent claim 1 (emphasis added). Dominion also asserts independent claim 15 and dependent claim 16. All three asserted claims require the claim limitation emphasized above. Thus, the accused product must compare "measurement data received from the subset [of sensors] to a controller target voltage band" in order to infringe the asserted claims. *See id.* at claims 1, 15, 16 (emphasis added). With that understanding of the relevant claim limitation, we turn to the accused system.

III.

Alstom Grid supplies software to electric utilities to manage their electric grids. For example, Alstom Grid sells a distribution management system ("DMS") software called e-terra*distribution*. E-terra*distribution* models every point on the entire grid in order to control all aspects of the distribution grid. Version 3.3 of e-terra*distribution*, as installed by Alstom Grid on Duke's systems, is the subject of this litigation. Alstom Grid illustrates its accused system as follows:



J.A. 12092. As the diagram shows, an optional add-on to the e-terra*distribution* software is the Load and Volt/VAR Management ("LVM") module. The LVM module provides recommendations to manage demand, improve the voltage quality, and provide reactive support to the surrounding distribution system. Here, the only functionality of e-terra*distribution* that Dominion accuses of infringement is the use of data from smart meters (that is, AMI data) in the LVM module when performing CVR.

At trial, the parties presented testimony regarding operation of the LVM module, as well as Alstom Grid's Distribution Network Analysis Functions ("DNAF") e-terra*distribution* version 3.3 User's Guide. *See* J.A. 14363–667 ("User's Guide"). As explained in Section 8 of the User's Guide, the LVM module has an iterative calculation engine called the "Objective Function." J.A. 10762; J.A. 14609. In each iteration, the Objective Function takes into account a large number of constraints in the system, then uses the grid model to calculate the voltages that would result at every point on the grid from hypothetical control adjustments. In some cases, the calculated voltage from the model differs from the measured voltage. This difference between the calculated (model) voltage and measured voltage is the error value. The software uses the error value to adjust the limits in

the Objective Function—and, accordingly, the model—for that particular location.

Specifically, Section 8.1.6 of the User's Guide discusses the voltage limit adjustment procedure:

> **8.1.6 Voltage Limit Adjustment**
>
> In a real distribution system, there may be several voltage measurements along the feeder. In an ideal case, the voltages calculated from the distribution power flow should match the voltage measurement perfectly. However, because of an imperfect model and an under-determined system, this rarely happens.
>
> By setting the Voltage Limit Adjustment option on the LVM page of the DNAF Configuration Editor to True, this mismatch can be taken into consideration in LVM. This option adjusts the voltage limit rather than the voltage itself.
>
> In Figure 46, the high/low voltage limit on the specified point can be adjusted as follows:
>
> $V_{newlimit} = V_{limit} + (V_{cal} - V_{meas})$

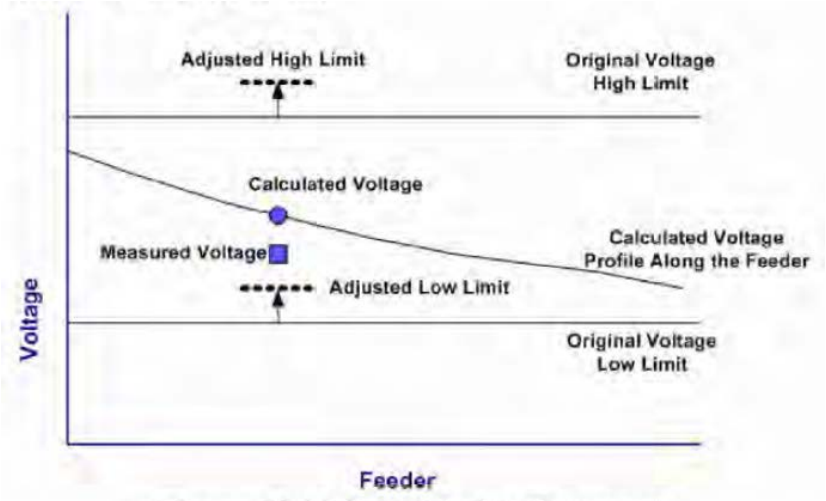
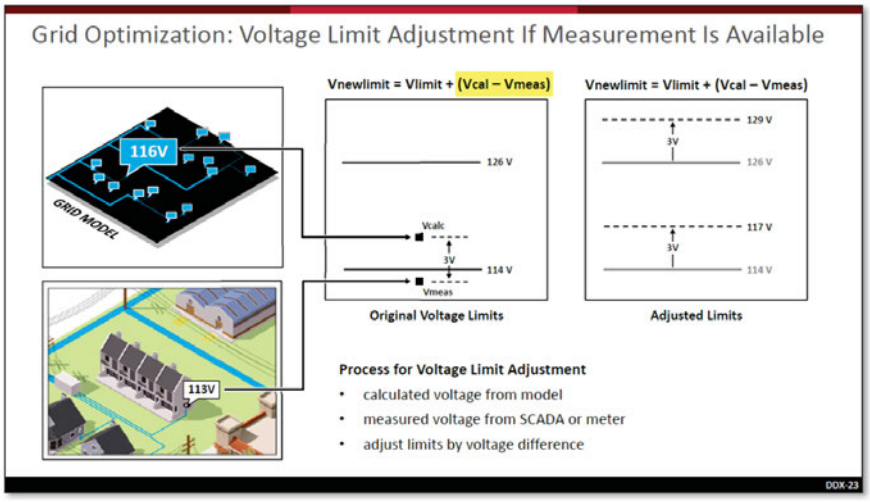


Figure 46: Voltage Limit Adjustment

J.A. 14614. Alstom Grid presented testimony from its software engineer, Dr. Paul Kuntz, who explained that the Objective Function runs iteratively until it finds an optimal control plan for the given constraints. To better illustrate the Objective Function, we review Dr. Kuntz's example:



J.A. 9412. In this example, the model calculates the voltage at a particular meter to be 116 volts. The measurement, however, shows that the meter is actually at 113 volts, which is 3 volts lower than the calculated voltage. Thus, the limit-adjustment algorithm will take the difference between the calculated and measured voltages (3 volts) and adjust the limits (the target band) for that specific meter by adding the 3-volt difference. As a result, the adjusted limits (target band) for this meter would be 117–129 volts—that is, 3 volts more than the standard 114–126 volt target band.

Next, the adjusted limits for this meter are passed into the Objective Function, which runs a hypothetical control plan for the system, generating a new hypothetical calculation for this meter. The Objective Function would compare the hypothetical calculated voltage for this meter to the adjusted limits. In this example, the calculated

voltage, 116 volts, is outside the adjusted limits, 117–129 volts. Therefore, the Objective Function would iteratively determine the effect of alternative hypothetical control plans until it finds a solution where the calculated voltage is within the adjusted limits. Dominion's expert, Dr. Richard Brown, agrees that the Objective Function uses only calculated—not measured—voltages. With this understanding of the accused functionality, we turn to the procedural history of this appeal.

IV.

As discussed above, the jury found that the AMI functionality within the LVM module of e-terra*distribution*, as installed on Duke's systems, literally infringed Dominion's '883 patent. The jury also found that Alstom Grid actively and willfully induced the infringement and awarded Dominion a reasonable royalty of $486,000.

On October 3, 2016, after two days of bench trial and post-trial hearings, the district court entered judgment against Alstom Grid for willful infringement, awarded $486,000 in damages to Dominion, granted a permanent injunction against Alstom Grid, and awarded enhanced damages, doubling the damages to $972,000.

On October 21, 2016, the district court denied Alstom Grid's post-trial motions for JMOL of noninfringement, to vacate or remit the reasonable royalty damages award, and for JMOL of no willful infringement and thus no double damages. Alstom Grid appeals. We have jurisdiction under 28 U.S.C. § 1295(a)(1).

DISCUSSION

We review the denial of a motion for JMOL under the law of the regional circuit. *ClearValue, Inc. v. Pearl River Polymers, Inc.*, 668 F.3d 1340, 1343 (Fed. Cir. 2012) (citing *Summit Tech., Inc. v. Nidek Co.*, 363 F.3d 1219, 1223 (Fed. Cir. 2004)). Under Third Circuit law, we exercise plenary review over a district court's rulings on

motions for JMOL, applying the same standard as the district court. *Agrizap, Inc. v. Woodstream Corp.*, 520 F.3d 1337, 1341–42 (Fed. Cir. 2008) (citing *Gagliardo v. Connaught Labs., Inc.*, 311 F.3d 565, 568 (3d Cir. 2002)). Thus, a grant of JMOL is appropriate only where a party has been fully heard on an issue during a jury trial and the court finds that a reasonable jury would not have a legally sufficient evidentiary basis to find for the party on that issue. *Agrizap*, 520 F.3d at 1341–42; *see* Fed. R. Civ. P. 50(a). As the reviewing court, we are mindful that we "may not weigh the evidence, determine the credibility of witnesses, or substitute [our] version of the facts for the jury's version." *Agrizap*, 520 F.3d at 1341–42 (citing *Lightning Lube, Inc. v. Witco Corp.*, 4 F.3d 1153, 1166 (3d Cir. 1993)). Here, we examine literal infringement, which exists only when every limitation recited in the claim is found in the accused device, exactly. *Microsoft Corp. v. GeoTag, Inc.*, 817 F.3d 1305, 1313 (Fed. Cir. 2016).

The question before us is whether substantial evidence supports the jury's finding that the accused system includes every limitation of the asserted claims. We conclude that it does not. As discussed above, the asserted claims require "generat[ing] an energy delivery parameter based on a comparison of the measurement data received from the subset to a controller target voltage band." *See* '883 patent claims 1, 15. The claims require a comparison of two specific things. Evidence of a comparison of something other than those two things does not support a finding of literal infringement.

We conclude that no reasonable juror could find that the accused product compares the measured data to a controller target voltage band. The evidence presented to the jury shows that the accused system compares the measured data to a single calculated voltage, as opposed to a voltage band as required by the claims. Indeed, it is

the calculated voltage, not the measured data, that the accused system compares to the voltage band.

Dominion relies heavily on the testimony of Dr. Brown, its technical expert. Dr. Brown's testimony, however, does not provide substantial evidence to support the jury's verdict because his testimony was conclusory, unsupported, contrary to the evidence in the case, or not directed to the claim limitation at issue. We address the problems with his testimony below.

Dr. Brown repeatedly testified to the jury that the measured voltage—as opposed to the calculated voltage—was used to indicate a voltage fault condition in the accused Duke system. *See* J.A. 10562. But he did not cite any particular documents to support his position. Furthermore, his testimony is contradicted by the User's Guide, which explains that it is the calculated voltage—not the measured voltage—that is used to indicate a voltage fault condition. He further testified that a voltage measurement comes back from the subset of the smart meters, and the Alstom Grid controller software compares the measured voltage to the acceptable voltage band range of 114–126 volts. But, again, this testimony was both unsupported by the record evidence and contradicted by the User's Guide.

Dr. Brown also asserted at trial that the demonstrative slides he prepared and presented to the jury showed the claimed comparison and were based on Alstom Grid's source code, deposition testimony, and the User's Guide. In particular, he testified that the fact that the controller software could identify whether or not there was a voltage fault condition was itself evidence that there was a comparison between the measured voltage and the target voltage band. But Dr. Brown's testimony does not necessarily show that the measured voltage is compared to a voltage band. And just saying that something is so does not make it true, especially when there is no record sup-

port and, in fact, the User's Guide indicates otherwise. *See Yoon Ja Kim v. ConAgra Foods, Inc.*, 465 F.3d 1312, 1320 (Fed. Cir. 2006) (affirming JMOL of non-infringement where "conclusory [expert] testimony" was the basis for infringement); *cf. Alpex Computer Corp. v. Nintendo Co.*, 102 F.3d 1214, 1222–23 (Fed. Cir. 1996) (holding that conclusory expert testimony did not support a finding of infringement).[1]

Dr. Brown also testified about Figure 46 of the User's Guide, reproduced above. *See* J.A. 14614 (Figure 46). As Dr. Brown explained, Figure 46 shows an error between the calculated voltage (circle) and the measured voltage (square). As he further explained, the software calculates the error between the calculated and measured voltages ($V_{cal} - V_{meas}$), then adds the error to the original low/high limits in the voltage band to obtain modified high/low limits. Indeed, Dr. Brown admitted that "everybody agrees [on] . . . how the software actually works." J.A. 10442. Nevertheless, he proceeded to engage in a discussion of hypothetical situations, illustrating the different situations that might occur if both, either, or neither calculated and measured voltages were within the range. In his hypothetical discussions, Dr. Brown asserted that the Alstom software "will compare the measured voltage to [the acceptable] range." J.A. 10436. But this testimony explicitly contradicts the text of Section 8.1.6, which only compares the calculated and measured voltages. The text of Section 8.1.6 never discloses or suggests making a comparison of the measured voltage to any range. Accordingly, Dr. Brown's hypotheticals are unfounded and cannot support the jury's finding that the accused system compares the measured voltage to a controller target voltage band.

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[1] Dominion chose to not rely on the doctrine of equivalents to prove infringement.

Beyond his conclusory testimony, Dr. Brown made several critical admissions. First, Dr. Brown agreed that the accused system compares the calculated voltage—not the measured voltage—to a target band:

> [Alstom Grid] compare[s] the calculated voltage to the measured voltage to determine the error. And then they use that error to adjust the limits. And then they compare the calculated voltage to the adjusted limits in their software.

J.A. 10562–63. Dr. Brown also admitted that the limit-adjustment algorithm code, which is the key algorithm in the accused system, does not compare the measured voltage and a target voltage band. Dr. Brown further admitted that the accused function "operates on *calculated* voltages" and "*never uses measured voltage* to generate an energy delivery plan." J.A. 10489–90, 10493. These admissions further support our conclusion that a reasonable jury would not have a legally sufficient evidentiary basis to find for Dominion on the issue of direct infringement.

Finally, Dominion cites Dr. Brown's testimony and excerpts from the User's Guide relating to a so-called "heuristic mode." Appellee Br. at 29–30 (citing J.A. 10446–48, in which Dr. Brown discussed the heuristic LVM methodology as described in Alstom Grid's e-terra*distribution* 3.3 User's Guide at Section 8.3.4 (J.A. 14636)). Alstom Grid's User's Guide does indeed teach that the heuristic mode compares the measured voltage to the target voltage range. It is undisputed, however, that the accused Duke system does not include the heuristic mode. *See* Oral Argument at 20:11–15, *available at* http://oralarguments.cafc.uscourts.gov/default.aspx?fl=2017-1158.mp3 ("There wasn't any evidence that [Duke was] using heuristic, your honor, that's right."), 20:59–21:09 ("there was no evidence that [Duke] used heuristic"); J.A. 11306 (stating, in Dominion's closing

statement, that the heuristic mode was not at issue in this case). Accordingly, Dominion's reliance on the heuristic mode is misplaced. We conclude that no reasonable jury could find that the accused Duke system compares the measured voltage to a voltage range and, accordingly, we reverse the district court's denial of JMOL of noninfringement.

CONCLUSION

For the reasons above, we reverse the district court's denial of JMOL of noninfringement based on an absence of substantial evidence to support the jury verdict. Accordingly, we vacate the damages award, judgment of willful infringement, enhanced damages award, and permanent injunction. We have considered Alstom Grid's remaining arguments and find them unpersuasive. We remand the case to the district court for entry of judgment of noninfringement of claims 1, 15, and 16 and for further proceedings consistent with this opinion.

VACATED-IN-PART, REVERSED-IN-PART, AND REMANDED

COSTS

Costs to Appellant.