

United States District Court,
D. Delaware.

MKS INSTRUMENTS, INC. and Applied Science and Technology, Inc,
Plaintiffs.

v.

ADVANCED ENERGY INDUSTRIES, INC,
Defendant.

No. CIV.A.03-469 JJF

Feb. 12, 2004.

Background: Owner of patents for use of plasma to produce chemically active gases sued competitor for infringement.

Holding: Construing claims, the District Court, Farnan, J., held that all patents required absence of impedance matching network.

Claims construed.

See also 2004 WL 253470.

6,150,628, 6,388,226, 6,486,431, 6,552,296, 6,559,408. Construed.

Melanie K. Sharp, Esquire, and John W. Shaw, Esquire of Young Conaway Stargatt & Taylor, LLP, Wilmington, DE. Of Counsel: Steven M. Bauer, Esquire and Joseph A. Capraro, Jr., Esquire of Testa, Hurwitz & Thibault, LLP, for Plaintiffs MKS Instruments, Inc. and Applied Science and Technology, Inc.

Thomas C. Grimm, Esquire and Sean P. Haney, Esquire of Morris, Nichols, Arsht & Tunnell, Wilmington, DE. Of Counsel: James P. Brogan, Esquire and Craig A. Neugeboren, Esquire of Cooley Godward, LLP, Broomfield, CO, for Defendant Advanced Energy Industries, Inc.

MEMORANDUM OPINION

FARNAN, District Judge.

MKS Instruments, Inc. and Applied Science and Technology, Inc. (collectively "MKS") allege that a

proposed product of Advanced Energy Industries, Inc. ("Advanced") infringes MKS's patents. Presently before the Court is the claim construction dispute of the parties. The parties briefed their respective positions, and the Court held a *Markman* hearing on January 13, 2004. This Memorandum Opinion provides the Court's interpretation of the claim terms disputed by the parties.

BACKGROUND

MKS alleges infringement of U.S. Patent Nos. 6,150,628 (" '628 patent"), 6,388,226 (" '226 patent"), 6,486,431 (" '431 patent"), 6,552,296 (" '296 patent"), and 6,559,408 (" '408 patent") (collectively "MKS patents"). The MKS patents generally involve systems which use a plasma to produce a reactive gas, to be used, principally, for cleaning the interior of semiconductor processing chambers.

Specifically, the '628 patent describes the use of AC switching power supplies to power transformer inductively coupled plasmas. Once a plasma is created, a reactive gas is fed into the plasma chamber where the electrons in the plasma collide with the molecules of the gas to dissociate the reactive gas into chemically active gases. These chemically active gases are then fed into the process chamber, which is coupled to the plasma chamber, where the chemically active gas cleans the process chamber.

The remaining MKS patents derive from the '628 patent. The '431 patent is a continuation of the '628 patent, and the '408 patent is a continuation of the '431 patent. The '226 patent is a continuation-in-part of the '628 patent, and the '296 patent is a continuation of the '226 patent.

DISCUSSION

I. The Legal Principals Of Claim Construction

[1] [2] Claim construction is a question of law. *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 977-78 (Fed.Cir.1995), *aff'd*, 517 U.S. 370, 388-90, 116 S.Ct. 1384, 134 L.Ed.2d 577 (1996). A claim term should be construed to mean "what one of ordinary skill in the art at the time of the invention would have understood the term to mean." *E.g.*, *Markman*, 52 F.3d at 986.

[3] The starting point for a claim construction analysis is the claims themselves. *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed.Cir.1996); *see also Pitney Bowes, Inc. v. Hewlett-Packard Co.*, 182 F.3d 1298, 1305 (Fed.Cir.1999) (stating that "[t]he starting point for any claim construction must be the claims themselves."). Thereafter, the remainder of the intrinsic evidence should be examined beginning with the specification and concluding with the prosecution history. *Vitronics*, 90 F.3d at 1582 (outlining this order for examination in claim construction).

Generally, there is a strong presumption in favor of the ordinary meaning of claim language as understood by those of ordinary skill in the art. *Bell Atl. Network Servs., Inc. v. Covad Communications Group, Inc.*, 262 F.3d 1258, 1268 (Fed.Cir.2001). However, "[t]he intrinsic record, comprising the claims, the written description, and the prosecution history if in evidence 'must be examined in every case to determine whether the presumption of ordinary and customary meaning is rebutted.'" *Arlington Indus., Inc. v. Bridgeport Fittings, Inc.*, 345 F.3d 1318, 1325-26 (Fed.Cir.2003) (quoting *Tex. Digital Sys., Inc. v. Telegenix, Inc.*, 308 F.3d 1193, 1204 (Fed.Cir.2002)).

If the meaning of a claim term is clear from the totality of the intrinsic evidence, then the claim may be construed. If, however, the meaning of a claim term is "genuinely ambiguous" after examining the intrinsic

evidence, then a court may consult extrinsic evidence. *Bell & Howell Document Mgmt. Prods. Co. v. Altek Sys.*, 132 F.3d 701, 706 (Fed.Cir.1997).

II. Construction of Disputed Terms

A) Whether the '628 patent should be construed to require the absence of an impedance matching network.

[4] In the previous litigation between MKS and Advanced in this Court, the Court construed disputed terms of the '628 patent.

The Court construed many of the terms of the '628 patent to require the absence of an impedance matching network. MKS contends that the plain and ordinary meaning of the claims does not require such an exclusion and seeks a new construction without the negative limitation. Advanced opposes this new proposed interpretation.

In construing the disputed phrase, the Court has reviewed the patent specification and prosecution history. While the language of the claims of the '628 patent do not explicitly exclude an impedance matching network from the invention, the patent specification and prosecution history make it clear that the invention was not intended to encompass an impedance matching network. *See SciMed Life Systems, Inc. v. Advanced Cardiovascular Systems, Inc.*, 242 F.3d 1337, 1345 (Fed.Cir.2001). For this reason, the Court construes the claims and disputed terms of the '628 patent not to require an impedance matching network.

B) Whether the '226, '296, '431, and '408 patents should be construed to require the absence of an impedance matching network.

MKS contends that, even if the Court maintains its construction that required the absence of an impedance matching network for the '628 patent, the newer patents-at-issue should not be construed to contain the same limitation. MKS contends that each of the new patents has characteristics which make it appropriate for the Court to exclude an impedance matching network limitation.

Advanced responds that the inclusion, in the more recent patents, of terms identical to those previously construed to contain the disputed negative limitation indicates a decision not to differentiate the later filed patents. Advanced contends that the entire '628 patent family should be construed to exclude devices with impedance matching networks.

MKS contends that the language of several of the patent claims implies that the absence of an impedance matching network is not required. For example, MKS argues that claim 1 of the '296 patent states that the power supply of the device does not require "the use of a conventional impedance matching network." (D.I.64.) MKS contends that such language makes it clear that the patented device "may include, but does not require, an impedance matching network." (D.I. 39, at 8 (emphasis removed).) MKS notes that the '408 patent contains similar language.

[5] Under the principles of claim differentiation, the aforementioned language implies that, in the other claims of the respective patents, a conventional impedance matching network is acceptable. However, claim differentiation is only a presumption and can be rebutted. *See Multiform Desiccants, Inc. v. Medzam, Ltd.*, 133 F.3d 1473, 1480 (Fed.Cir.1998); *Sunrace Roots Enter. Co., Ltd. v. SRAM Corp.*, 336 F.3d 1298, 1302 (Fed.Cir.2003).

[6] The Court finds that the '431 and '408 patents are continuations of the '628 patent and have identical specifications and disclaimers. For the same reasons that the '628 patent requires the exclusion of an impedance matching network, the Court concludes that the '431 and '408 patents also require the exclusion of an impedance matching network.

[7] The '226 and '296 patents are only continuations-in-part of the '628 patent, and, therefore, are not as derivative of the '628 patent. However, after a review of the relevant materials, the Court concludes that the '226 and '296 patents must be construed to exclude impedance matching networks.

In *Omega Eng'g, Inc. v. Raytek Corp.*, the Court of Appeals for the Federal Circuit held that a "prosecution disclaimer may arise from disavowals made during the prosecution of ancestor patent applications," and applied the negative limitation from a patent to the continuation-in-part of the patent. 334 F.3d 1314, 1333 (Fed.Cir.2003). The *Omega Court* held that "unless otherwise compelled, [it is presumed] that the same claim term in the same patent or related patents carries the same construed meaning." *Id.* at 1334.

The claim construction for the '628 patent was issued by the Court on April 26, 2002 before any of the other patents were issued, FN1 and MKS had an opportunity to amend its application and use language that expressly avoided ambiguity as to whether an impedance matching network could be included in the later issued patents. Instead, MKS used the same limited terms and failed to differentiate the terms of the '226 and '296 patents from the terms of the '628 patent. Thus, the Court concludes the terms of the '628 patent family should be construed consistently.

FN1. The '226 patent was filed on February 10, 2000 and issued on May 14, 2002. The '296 patent was filed on September 17, 2001 and issued on April 22, 2003. The '431 patent was filed on September 12, 2000 and issued on November 26, 2002. The '408 patent was filed on May 10, 2002 and issued on May 6, 2003.

C) Whether the Court's previous construction of "impedance matching network" should be clarified

[8] In the prior litigation between the parties, the Court defined an impedance matching network to be "a lossless network placed between the power supply and the discharge to ensure maximum power transfer." (D.I. 41, exhibit B.) MKS contends that the Court's definition of impedance matching network is unclear. MKS suggests that the phrase "by matching the impedance of the power supply and load" be added to the end of the previous definition. (D.I. 39, at 19.) MKS further suggests that this added phrase be defined to mean "making the resistance of the load equal to the internal resistance of the power supply and making the net reactance of the load and the power supply zero." (*Id.* at 20.)

Advanced contends that the Court's previous definition was appropriate and opposes any modification or clarification. Advanced contends that MKS's suggestion would require a perfect impedance matching network which is impossible and, in effect, no limitation on the MKS patents.

The Court concludes that its previous construction should be clarified, but the clarification does not require the level of specificity proposed by MKS. Clarified, the Court construes an "impedance matching network" to mean "a lossless network placed between the power supply and the discharge to ensure maximum power transfer by matching, although not perfectly, the impedance of the power supply and load."

D) Claim Construction for the terms not previously construed

1) "Protrusion" and "Protruded"

[9] The terms "protrusion" and "protruded" appear in the '296 patent. MKS contends that "protrusion" and "protruded" should be construed in accord with the ordinary meaning of the terms as "a portion that projects from a surface" and "having a portion that projects from a surface" respectively. Pursuant to its plain and ordinary meaning, the Court concludes that "protrusion" means "a projection" and "protruded" means "projecting."

2) "Gas Mixing Device"

[10] The term "gas mixing device" appears in the '226 patent. MKS contends that this term means "a device that alters the flow pattern of a feed gas as it enters the plasma chamber, so that the feed gas mixes and reacts with the plasma." (D.I. 39 at 24.) Advanced contends that, as used in the claims of the '226 patent, a "gas mixing device" is a "device that creates a gas flow pattern in the plasma channel which enhances the interaction between the feed gas and the plasma." Advanced contends that this definition is mandated by sections of the patent specification which state that "[t]he purpose of the gas mixing device is to create a gas flow pattern in the plasma channel which enhances the interaction between the feed gas and the plasma," and that "[a] gas mixing device enhances the interaction between the feed gases and the plasma thereby improving the dissociation and abatement efficiencies of the plasma source." (D.I. 41 at 37-28 (quoting exhibit J).) Advanced contends that this description is not limited to a specific embodiment of the device.

The Court concludes that an interpretation based more closely on the specification is preferred. Thus, the Court concludes that "gas mixing device" means a "device that creates a gas flow pattern in the plasma channel which enhances the interaction between the feed gas and the plasma."

3) "Protected from the Plasma"

MKS and Advanced agree that "protected from the plasma," and variations thereof, should be defined according to their ordinary meaning, but disagree on the expression of the ordinary meaning. The Court concludes that "protected from a plasma" should be defined according to its ordinary meaning and concludes that no further interpretation is necessary.

4) "Gas Inlet of the Plasma Chamber"

[11] Advanced contends that the term "gas inlet of the plasma chamber" should be construed according to its ordinary meaning as "an opening for gas to enter the plasma chamber." MKS has not submitted a contrary construction. Therefore, the Court concludes that "gas inlet of the plasma chamber" shall be construed according to its ordinary meaning to mean "an opening for gas to enter the plasma chamber."

5) "Conventional Impedance Matching Network"

The term "conventional impedance matching network" appears in the '408 patent. Both parties contend that "conventional" should be construed according to its ordinary meaning. When the Court defined "impedance matching network" in the '628 patent, the Court did so with reference to only conventional impedance matching networks. Therefore, the Court concludes that further definition of "conventional impedance matching network" is unnecessary.

6) "Dielectric"

[12] The parties agree that the term "dielectric" should be construed according to its ordinary meaning. Though the parties submit different constructions, Advanced contends that the submitted meanings are synonymous. The Court construes "dielectric" according to its ordinary meaning to mean "electrically insulating."

7) "Dielectric Spacer"

[13] The term "dielectric spacer" appears in the '296 and '628 patent. MKS contends that "dielectric spacer" should be construed to mean "an insulating material inserted between two components to keep them electrically apart." (D.I. 53 at 1.) Advanced contends that "dielectric spacer" should be construed to mean "any component or device that holds two parts at a distance from each other." (D.I. 56 at 8.) The parties primarily dispute the physical properties of a dielectric spacer. While the terms "dielectric" and "spacer" are individually capable of ordinary and common construction, "dielectric spacer" is not a term of common or ordinary usage. After reviewing the patent claims, specification, and prosecution history, the Court construes "dielectric spacer" to mean "an insulating material or device that keeps components electrically apart."

CONCLUSION

For the reasons discussed, the Court has construed the disputed terms of the MKS patents as provided herein. An Order consistent with this Memorandum Opinion will be entered setting forth the meaning of the disputed terms in the MKS patents.

ORDER

At Wilmington, this 12th day of February 2004, for the reasons discussed in the Memorandum Opinion issued this date;

IT IS HEREBY ORDERED that:

- 1) The terms "AC switching power supply," "driving current in the primary winding," "driving the primary winding of the transformer with a current," "coupled to," and "electrically connected" of U.S. Patent No. 6,150,628 (" '628 patent"), and its progeny, U.S. Patent Nos. 6,388,226 (" '226 patent"), 6,486,431 (" '431 patent"), 6,552,296 (" '296 patent"), and 6,559,408 (" '408 patent"), are construed to disallow the use of impedance matching networks;
- 2) The term "impedance matching network" means "a lossless network placed between the power supply and the discharge to ensure maximum power transfer by matching, although not perfectly, the impedance of the power supply and load";
- 3) The term "protrusion" means "a projection"; the term "protruded" means "projecting";
- 4) The term "gas mixing device" means a "device that creates a gas flow pattern in the plasma channel which enhances the interaction between the feed gas and the plasma";
- 5) The Court declines to further interpret the term "protected from a plasma"; it shall be understood by its

ordinary and customary meaning;

- 6) The term "gas inlet of the plasma chamber" means "an opening for gas to enter the plasma chamber";
- 7) The Court declines to further interpret the term "conventional impedance matching network"; it shall be understood by its ordinary and customary meaning;
- 8) The term "dielectric" means "electrically insulating";
- 9) The term "dielectric spacer" means "an insulating material or device that keeps components electrically apart";

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