UNITED STATES DISTRICT COURT DISTRICT OF MINNESOTA

STRATASYS INC.)
Plaintiff,))
v.)
MICROBOARDS TECHNOLOGY, LLC))))
d/b/a AFINIA))))
Defendant.)))

Case No. _____

COMPLAINT AND DEMAND FOR JURY TRIAL

COMPLAINT FOR PATENT INFRINGEMENT

Plaintiff Stratasys Inc., for its Complaint against Defendant Microboards Technology, LLC d/b/a Afinia, alleges as follows:

PARTIES

1. Plaintiff Stratasys Inc. ("Stratasys") is a Delaware corporation with a

principal place of business at 7665 Commerce Way, Eden Prairie, Minnesota 55344.

2. On information and belief, Defendant Microboards Technology, LLC is a

Minnesota limited liability company with a principal place of business at 8150 Mallory Court, Chanhassen, Minnesota 55317 and conducts business relevant to this action through its unincorporated division known as Afinia. The defendant is hereinafter referred to as Afinia.

JURISDICTION AND VENUE

3. This is an action for patent infringement arising under the patent laws of the United States, 35 U.S.C. § 1 et seq.

4. This Court has subject matter jurisdiction over this action under 28 U.S.C.§§ 1331 and 1338(a).

5. The Court has both general and specific personal jurisdiction over Afinia. On information and belief, Afinia transacts business and has continuous and systematic contacts in this District, maintains an ongoing presence within the District, and has committed acts of patent infringement in this District.

6. Venue is proper in this judicial district under 28 U.S.C. §§ 1391(b) and (c) and 1400(b).

FACTS

7. Stratasys was founded in 1989 by Steven Scott Crump, an engineer and inventor, and Lisa H. Crump to capitalize on Mr. Crump's invention of Fused Deposition Modeling, which is an additive manufacturing process that prints three dimensional ("3D") objects from computer models by building up layers of one or more extruded materials onto a platform using a device that has come to be generally known as a 3D printer. Stratasys has commercialized this technology in its FDM® 3D printers and production systems.

8. Stratasys has grown from a small start-up to be the worldwide leader in sales of 3D printers. The Stratasys FDM® printers and systems are used for prototyping, design,

and manufacturing purposes, and are used extensively in engineering, aerospace, automotive, medical, education, and many other industries and applications.

9. Stratasys has invested millions of dollars in improving its FDM® technology over the past two and a half decades since its inception, and has numerous patents covering advancements in Fused Deposition Modeling devices and methods.

10. In 2012, Stratasys Inc. merged with Objet Ltd. of Rehovot, Israel to form the corporate entity Stratasys Ltd. (Nasdaq: SSYS). Today, Stratasys Ltd. and its subsidiaries, including Stratasys Inc. and MakerBot Industries, have more than 1500 employees, hold more than 500 granted or pending additive manufacturing patents globally, and have received numerous awards for technology and leadership.

11. In recent years, other companies have begun to make and sell 3D printers that incorporate features and capabilities involving the extrusion of materials in additive layers to form 3D objects. For example, by 2011, a Chinese company began making and selling the UP! printer. On information and belief, the UP! printer is sold in the United States through direct sales over the Internet, through resellers, and through original equipment manufacturers who rebrand and repackage imported UP! printers under their own name and may add features or enhancements to the printer.

12. On information and belief, Afinia began selling a rebranded and repackaged UP! printer as the Afinia H-Series 3D Printer at least by 2012. Afinia sells the Afinia H-Series 3D Printer at least through its website (www.afinia.com) and online retailers. Afinia also makes available and distributes marketing, instructional, and support materials to customers through its website. Afinia also maintains a technical support staff that

provides support to customers, including through Afinia's website and by email and telephone.

PATENTS IN SUIT

13. On August 5, 1997, U.S. Patent No 5,653,925 ("the '925 patent") entitled "METHOD FOR CONTROLLED POROSITY THREE-DIMENSIONAL MODELING," was duly and lawfully issued by the United States Patent and Trademark Office. Stratasys was assigned and continues to hold all right, title, and interest in the '925 patent. A true and correct copy of the '925 patent is attached as Exhibit A to this Complaint.

14. On February 2, 1999, U.S. Patent No. 5,866,058 ("the '058 patent"), entitled "METHOD FOR RAPID PROTOTYPING OF SOLID MODELS," was duly and lawfully issued by the United States Patent and Trademark Office. Stratasys was assigned and continues to hold all right, title, and interest in the '058 patent. A true and correct copy of the '058 patent is attached as Exhibit B to this Complaint.

15. On December 21, 1999, U.S. Patent No. 6,004,124 ("the '124 patent"), entitled "THIN-WALL TUBE LIQUIFIER," was duly and lawfully issued by the United States Patent and Trademark Office. Stratasys was assigned and continues to hold all right, title, and interest in the '124 patent. A true and correct copy of the '124 patent is attached as Exhibit C to this Complaint.

16. On January 8, 2013, U.S. Patent No. 8,349,239 ("the '239 patent"), entitled "SEAM CONCEALMENT FOR THREE-DIMENSIONAL MODELS," was duly and lawfully issued by the United States Patent and Trademark Office. Stratasys was assigned

and continues to hold all right, title, and interest in the '239 patent. A true and correct copy of the '239 patent is attached as Exhibit D to this Complaint.

INFRINGING PRODUCT

17. On information and belief, Afinia makes, uses, offers to sell, and/or sells within the United States and/or imports into the United States an Afinia H-Series 3D Printer, an example of which is shown below.



(See Exhibit E, Afinia H-Series 3D Printer User's Manual, cover.)

18. The Afinia H-Series 3D Printer creates 3D objects, which, for example, can be used for prototyping and design purposes. Generally speaking, the 3D model is created by delivering plastic filament from a spool through an extruder and nozzle, which heats the filament to printing temperature and deposits it onto a platform. The filament is deposited layer-by-layer in a pattern to create a 3D model. (*See, e.g.*, Exhibit E, Afinia H-Series 3D Printer User's Manual at 6; *see also, e.g.*, Afinia Product Videos, available at http://www.afinia.com/support/product-videos (last visited Nov. 22, 2013); Afinia Video, available at http://www.youtube.com/watch?v=RoXLsHJwmnE (last visited Nov. 22, 2013).)

19. Afinia markets and sells the Afinia H-Series 3D Printer to the general public, including to hobbyists and educators and to persons interested in using the printer for prototyping and design purposes. (*See, e.g.*, Afinia Product Videos, available at http://www.afinia.com/support/product-videos (last visited Nov. 22, 2013); Afinia Video, available at http://www.youtube.com/watch?v=RoXLsHJwmnE (last visited Nov. 22, 2013).)

20. Afinia sells the Afinia H-Series 3D Printer at least through its website (https://store.afinia.com/) and online retailers. Afinia also distributes marketing, instructional, and support materials for the Afinia H-Series 3D Printer to customers through its website. (*See* Exhibit E, Afinia H-Series 3D Printer User's Manual; Exhibit F, Afinia H-Series Product Brochure; Afinia Product Videos, available at http://www.afinia.com/support/product-videos (last visited Nov. 22, 2013); Afinia Technical Videos, available at http://www.afinia.com/support/technical-videos (last visited Nov. 22, 2013).)

21. On information and belief, before and/or during development of the Afinia H-Series 3D Printer, Afinia investigated and analyzed the market and business opportunities for 3D printer technology. On information and belief, Afinia is believed to have obtained knowledge of patents of competitors, likely including patents of Stratasys, before and/or

during the research and development of the Afinia H-Series 3D Printer. (*See* Exhibit G, *Executive Interview: Mitch Ackmann*, 3D Printing Industry (Aug. 28, 2013) (President of Afinia).) Afinia is also believed to have obtained and analyzed 3D printers of its competitors, which likely would include Stratasys Inc. and MakerBot printers. (*Id.*)

COUNT 1 INFRINGEMENT OF THE '925 PATENT

22. Stratasys reaffirms and realleges the allegations set forth in Paragraphs 1-21 above.

23. The '925 patent generally relates to methods for controlling the porosity of objects through, among other things, adjusting the rate of deposition of material to create gaps as the object is built up layer by layer. (*See* Exhibit A.)

24. At least as of the date of filing of this Complaint, Afinia has knowledge of the '925 patent.

25. On information and belief, the Afinia H-Series 3D Printer has been and/or is being used in a manner that infringes at least one claim of the '925 patent.

26. The Afinia H-Series 3D Printer includes porosity controls. For example, the User's Manual for the Afinia H-Series 3D Printer describes "Fill Settings" that allow the user to select from "four ways to fill the interior of the parts." (Exhibit E, Afinia H-Series 3D Printer User's Manual at 24.) These Fill Settings provide a pre-determined porosity for a 3D object by adjusting the rate of the dispensing material. Afinia includes the following graphic in its User's Manual, showing how the porosity controls will vary the porosity of an object made with the Afinia H-Series 3D Printer:



(Id.)

27. On information and belief, Afinia has directly infringed and is directly infringing the '925 patent under 35 U.S.C. § 271(a) by its use of the Afinia H-Series 3D Printer in the United States to perform at least one claim of the '925 patent.

28. In addition, on information and belief, at least as of the filing date of this Complaint, Afinia has actively induced and is actively inducing others, such as Afinia's customers, to directly infringe at least one claim of the '925 patent in the United States, in violation of 35 U.S.C § 271(b). For example, on information and belief, Afinia has sold or otherwise provided its Afinia H-Series 3D Printer to third parties, such as Afinia's customers, the use of which by Afinia's customers has directly infringed and is directly infringing at least one claim of the '925 patent. The Afinia H-Series 3D Printer, for example, includes the "Fill Settings" described above for controlling porosity in the 3D object. Afinia, moreover, specifically intends and encourages its customers to use its Afinia H-Series 3D Printer in violation of the '925 patent. This is shown from Afinia's User's Manual for the Afinia H-Series 3D Printer, which describes the use of the "Fill Settings," which in turn control the porosity of the 3D object created using the Afinia H-Series 3D Printer. Afinia, therefore, intends and encourages its customers to select a porosity when printing a 3D model with the Afinia H-Series 3D Printer and to therefore use the Afinia H-Series 3D Printer in violation of one or more claims of the '925 patent.

29. In addition, on information and belief, at least as of the filing date of this Complaint, Afinia has contributed to and is contributing to the direct infringement of at least one claim of the '925 patent by third parties, such as Afinia's customers, in the United States, in violation of 35 U.S.C § 271(c). For example, on information and belief, Afinia has contributed to and is contributing to infringement of the '925 patent by selling its customers Afinia H-Series 3D Printers, the use of which by Afinia's customers has directly infringed and is directly infringing at least one claim of the '925 patent. Indeed, on information and belief, each "Fill Setting" for the Afinia H-Series 3D Printer creates gaps between the material, and there does not appear to be a fill setting option other than those identified in the User's Manual. Accordingly, there are no substantial and non-infringing uses of the Afinia H-Series 3D Printer. The Afinia H-Series 3D Printer is also a material part of the invention of the '925 patent.

30. On information and belief, Afinia will continue to directly infringe, actively induce others to infringe, and/or contribute to the infringement of the '925 patent unless and until Afinia is enjoined by this Court.

31. As a result, Stratasys will be damaged and will be irreparably injured unless and until Afinia's infringing activities are enjoined by this Court.

32. On information and belief, and as explained above, Afinia had knowledge of competitor patents before and/or during development of the Afinia H-Series 3D Printer. Afinia is also believed to have obtained and analyzed 3D printers of its competitors. If Stratasys learns of facts during discovery that show willful infringement of the '925 patent, Stratasys reserves the right to and intends to assert willful infringement of the '925 patent.

COUNT II INFRINGEMENT OF THE '058 PATENT

33. Stratasys reaffirms and realleges the allegations set forth in Paragraphs 1-32 above.

34. The '058 patent generally relates to methods for controlling the solidification of extruded materials in layers by, among other things, maintaining a build environment in the vicinity where material is deposited at a temperature above a solidification temperature. The claimed methods tend to reduce the impact of curl deformation due to internal stresses created in the object during solidification. (*See* Exhibit B.)

35. At least as of the date of filing of this Complaint, Afinia has knowledge of the '058 patent.

36. On information and belief, the Afinia H-Series 3D Printer has been and/or is being used in a manner that infringes at least one claim of the '058 patent.

37. The Afinia H-Series 3D Printer maintains a heated build environment above the solidification temperature at least through the heating of the platform upon which the extruder deposits the material.

38. For example, the User's Manual for the Afinia H-Series 3D Printer

emphasizes that "[o]ne of the keys to successful printing on the Afinia H-Series 3D Printer

is platform preparation and preheating" and that a "very well preheated" platform will

achieve the best results:

Printing

- **TIP:** One of the keys to successful printing on the Afinia H-Series 3D Printer is **platform preparation** and **preheating**. Particularly with large parts, there is a tendency for the edges of the part to lift from the platform (which can be a little colder than the center) and cause the parts to warp. The best results will be achieved if:
 - The platform is perfectly level and calibrated
 - The nozzle height is correctly set
 - The printer is being run in a room that is not too cold (warmer than 65° F) and free of drafts
 - The platform is very well preheated

(Exhibit E, Afinia H-Series 3D Printer User's Manual at 26.) In fact, the Afinia H-Series 3D Printer includes a "Table Heat 1hr" option which heats the platform to 105°C for a full hour. (*Id.* at 17.)

39. In addition, the User's Manual explains that the extruder nozzle "heats the

filament to printing temperature and deposits it on the Platform," and cautions the user that

"[t]he extruder and platform are hot." (Exhibit E, Afinia H-Series 3D Printer User's

Manual at 6, 31.)

40. The User's Manual for the Afinia H-Series 3D Printer further states that

"Preheating the platform (see page 26) to at least 90 degrees C when printing with ABS is a step you don't want to miss." (Exhibit E, Afinia H-Series 3D Printer User's Manual at 34.)

The manual also teaches to "[p]osition the parts as close to the center of the platform as

possible," which is "where the heating is most regulated." (*Id.*)

41. On information and belief, Afinia has directly infringed and is directly infringing the '058 patent under 35 U.S.C. § 271(a) by its use of the Afinia H-Series 3D Printer in the United States to perform at least one claim of the '058 patent.

42. In addition, on information and belief, at least as of the date of filing of this Complaint, Afinia has actively induced and is actively inducing others, such as Afinia's customers, to directly infringe at least one claim of the '058 patent in the United States, in violation of 35 U.S.C § 271(b). For example, on information and belief, Afinia has sold or otherwise provided its Afinia H-Series 3D Printer to third parties, such as Afinia's customers, the use of which by Afinia's customers has directly infringed and is directly infringing at least one claim of the '058 patent. The Afinia H-Series 3D Printer, on information and belief, includes a platform heating feature that will maintain a build environment in the vicinity where material is deposited at a temperature above a solidification temperature. Afinia, moreover, specifically intends and encourages its customers to use its Afinia H-Series 3D Printer and to, among other things, maintain a temperature above a solidification temperature in violation of the '058 patent. This is shown from the User's Manual for the Afinia H-Series 3D Printer, which, for example, instructs users to preheat the platform before depositing the material. As explained above, the User's Manual emphasizes that the platform should be "very well preheated." (Exhibit E, Afinia H-Series 3D Printer User's Manual at 26.) The User's Manual also states that "[t]he extruder and platform are hot," (*id.* at 31), and that preheating the platform "is a step you don't want to miss," (id. at 34).

43. In addition, on information and belief, at least as of the date of filing of this Complaint, Afinia has contributed to and is contributing to direct infringement of at least one claim of the '058 patent by third parties, such as Afinia's customers, in the United States, in violation of 35 U.S.C § 271(c). For example, on information and belief, Afinia has contributed to and is contributing to infringement of the '058 patent by selling its customers Afinia H-Series 3D Printers, the use of which by Afinia's customers has directly infringed and is directly infringing the '058 patent. Indeed, on information and belief, the Afinia H-Series 3D Printer does not have any substantial and non-infringing uses. The User's Manual, for example, emphasizes that to avoid undesirable lift at the corners of an object, the platform should be preheated. (Exhibit E, Afinia H-Series 3D Printer User's Manual at 34.) The User's Manual also states that the platform should be "very well preheated," (*id*. at 26), that "[t]he extruder and platform are hot," (*id*. at 31), and that preheating the platform "is a step you don't want to miss," (id. at 34). The Afinia H-Series 3D Printer is also a material part of the invention of the '058 patent, as use of the device infringes one or more claims of the '058 patent.

44. On information and belief, Afinia will continue to directly infringe, actively induce others to infringe, and/or contribute to the infringement of the '058 patent unless and until Afinia is enjoined by this Court.

45. As a result, Stratasys will be damaged and will be irreparably injured unless and until Afinia's infringing activities are enjoined by this Court.

46. On information and belief, and as explained above, Afinia had knowledge of competitor patents before and/or during development of the Afinia H-Series 3D Printer.

Afinia is also believed to have obtained and analyzed 3D printers of its competitors. If Stratasys learns of facts during discovery that show willful infringement of the '058 patent, Stratasys reserves the right to and intends to assert willful infringement of the '058 patent.

COUNT III INFRINGEMENT OF THE '124 PATENT

47. Stratasys reaffirms and realleges the allegations set forth in Paragraphs 1-46 above.

48. The '124 patent generally relates to an apparatus for controlling the temperature of extrudable material in the liquifier of the extruder through the use of a novel thin-wall tube construction in the liquifier. (*See* Exhibit C.)

49. Stratasys makes and sells 3D printers that are embodied by one or more claims of the '124 patent.

50. Stratasys has complied with 35 U.S.C. § 287(a) by marking its products with the '124 patent.

51. On information and belief, Afinia has directly infringed and is directly infringing at least one claim of the '124 patent under 35 U.S.C. § 271(a) by making, using, offering to sell, and/or selling within the United States and/or importing into the United States its Afinia H-Series 3D Printer and extruder replacement parts.

52. On information and belief, the Afinia H-Series 3D Printer includes a liquifier having a thin-wall tube with a section of the tube encased in a heating block. Depicted below is a photograph from the Afinia H-Series 3D Printer User's Manual, which generally shows a portion of the extruder assembly, which includes a thin-wall tube liquifier:



(Exhibit E, Afinia H-Series 3D Printer User's Manual at 14.)

53. On information and belief, Afinia will continue to directly infringe the '124 patent unless and until Afinia is enjoined by this Court.

54. As a result, Stratasys will be damaged and will be irreparably injured unless and until Afinia's infringing activities are enjoined by this Court.

55. On information and belief, and as explained above, Afinia had knowledge of competitor patents before and/or during development of the Afinia H-Series 3D Printer. Afinia is also believed to have obtained and analyzed 3D printers of its competitors. If Stratasys learns of facts during discovery that show willful infringement of the '124 patent, Stratasys reserves the right to and intends to assert willful infringement of the '124 patent.

COUNT IV INFRINGEMENT OF THE '239 PATENT

56. Stratasys reaffirms and realleges the allegations set forth in Paragraphs 1-55 above.

57. The '239 patent generally relates to methods for concealing layer seams by generating a contour tool path for a layer of extruded material, where the contour tool path

comprises a start point, a stop point, and a path between the start point and the stop point that seals a perimeter of a layer. For example, the start and/or stop points may be located within the interior of a perimeter of the contour tool path as, for example, illustrated in Figure 10 of the '239 patent:



(See Exhibit D.)

58. At least as of the date of filing of this Complaint, Afinia has knowledge of the '239 patent.

59. On information and belief, the Afinia H-Series 3D Printer has been and/or is being used in a manner that infringes at least one claim of the '239 patent.

60. On information and belief, the Afinia H-Series 3D Printer creates a contour tool path that generates seams that seal a perimeter of a layer. For example, the start and/or stop points of the contour tool path are at a location within the interior region of a perimeter of a layer.

61. On information and belief, Afinia has directly infringed and is directly infringing the '239 patent under 35 U.S.C. § 271(a) by its use of the Afinia H-Series 3D Printer in the United States to perform at least one claim of the '239 patent.

62. In addition, on information and belief, at least as of the filing date of this Complaint, Afinia has actively induced and is actively inducing others, such as Afinia's customers, to directly infringe at least one claim of the '239 patent in the United States, in violation of 35 U.S.C § 271(b). For example, on information and belief, Afinia has sold or otherwise provided its Afinia H-Series 3D Printer to third parties, such as Afinia's customers, the use of which by Afinia's customers has directly infringed and is directly infringing at least one claim of the '239 patent. Afinia, moreover, specifically intends and encourages its customers to use the Afinia H-Series 3D Printer along with custom designed software in violation of the '239 patent. Afinia, for example, includes "custom designed" Afinia software with the Afinia H-Series 3D Printer. (Exhibit E, Afinia H-Series 3D Printer User's Manual at 6; Afinia Product Videos, available at http://www.afinia.com/ support/product-videos (last visited Nov. 22, 2013).) In addition, Afinia instructs users of the Afinia H-Series 3D Printer how to load and run the Afinia software. (See Exhibit E, Afinia H-Series 3D Printer User's Manual at 9 ("Driver and Software Installation"); Afinia Technical Videos, available at http://www.afinia.com/support/technical-videos (last visited Nov. 22, 2013).) Furthermore, Afinia states: "Our printer provides superior fit and finish so you know your prints will be strong and look great." (Afinia Product Videos, available at http://www.afinia.com/support/product-videos (last visited Nov. 22, 2013).) On information and belief, in order to provide "superior fit and finish," the Afinia H-Series 3D Printer, in conjunction with the software, creates a contour tool path that generates seams in violation of at least one claim of the '239 patent. Afinia therefore encourages and

intends for its customers to use the Afinia H-Series 3D Printer in a manner that violates one or more claims of the '239 patent.

63. In addition, on information and belief, at least as of the filing date of this Complaint, Afinia has contributed to and is contributing to direct infringement of at least one claim of the '239 patent by third parties, such as Afinia's customers, in the United States, in violation of 35 U.S.C § 271(c). For example, on information and belief, Afinia has contributed to and is contributing to infringement of the '239 patent by selling its customers Afinia H-Series 3D Printers, the use of which by Afinia's customers has directly infringed and is directly infringing the '239 patent. Indeed, on information and belief, the Afinia H-Series 3D Printer software is specifically designed to create a concealed seam by generating a contour tool path in violation of at least one claim of the '239 patent. On information and belief, there are no substantial and non-infringing uses relating to the Afinia H-Series 3D Printer. For example, on information and belief, in order to provide "superior fit and finish," the Afinia H-Series 3D Printer, in conjunction with the software, creates a contour tool path that generates seams in violation of at least one claim of the '239 patent. The Afinia H-Series 3D Printer is also a material part of the invention of the '239 patent, as use of the device infringes one or more claims of the '239 patent.

64. On information and belief, Afinia will continue to directly infringe, actively induce others to infringe, and/or contribute to the infringement of the '239 patent unless and until Afinia is enjoined by this Court.

65. As a result, Stratasys will be damaged and will be irreparably injured unless and until Afinia's infringing activities are enjoined by this Court.

66. On information and belief, and as explained above, Afinia had knowledge of competitor patents before and/or during development of the Afinia H-Series 3D Printer. Afinia is also believed to have obtained and analyzed 3D printers of its competitors. If Stratasys learns of facts during discovery that show willful infringement of the '239 patent, Stratasys reserves the right to and intends to assert willful infringement of the '239 patent.

PRAYER FOR RELIEF

Wherefore, Stratasys requests entry of a judgment against Afinia granting the following relief:

- A. Finding Afinia liable for infringement of the patents-in-suit;
- B. Awarding Stratasys damages adequate to compensate for the infringement, including its lost profits and no less than a reasonable royalty;
- C. Declaring this an exceptional case within the meaning of 35 U.S.C. § 285 and awarding Stratasys its reasonable attorneys' fees, costs and disbursements;
- D. Awarding Stratasys interest on all damages awarded;
- E. Preliminarily and permanently enjoining Afinia, together with any officers, agents, servants, employees, and attorneys and such other persons in active concert or participation with them who receive actual notice of the order, from further infringement of the patents-in-suit; and
- F. Awarding such other relief as is just and proper.

DEMAND FOR JURY TRIAL

Plaintiff Stratasys demands a trial by jury of all issues triable by a jury.

Dated: November 25, 2013

s/ Kenneth A. Liebman

Kenneth A. Liebman (MN 236731) Timothy E. Grimsrud (MN 034283X) Lauren M.W. Steinhaeuser (MN 0392477) **FAEGRE BAKER DANIELS LLP** 2200 Wells Fargo Center 90 South Seventh Street Minneapolis, MN 55402 Telephone: (612) 766-7000 Fax: (612) 766-1600

Attorneys for Plaintiff Stratasys Inc.