

Recycling Efforts and Patent Rights Protection in the United States and Japan

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INTRODUCTION

On January 31, 2006, a ruling by Japan's Intellectual Property High Court sent a shockwave through the Japanese recycling industry.¹ In *Canon Inc. v. Recycle Assist Co.*, the Grand Panel² issued an injunction against Recycle Assist's recycling activities for infringing Canon's Patent No. 3,278,410.³ Recycle Assist had been selling recycled Canon-brand ink cartridges.⁴ Recycle Assist's goods were produced by refilling used Canon ink cartridges with ink.⁵ Recycling a single ink cartridge can conserve three quarts of oil and approximately 2.5 pounds of plastic.⁶

Greenpeace reports that the annual amount of discarded electronic products is increasing dramatically.⁷ The world generates approximately 20 million to 50 million tons of electronic waste every year.⁸ According to Greenpeace, packing this amount of electronic waste in train containers could create a train that is as long as the Earth's circumference.⁹ At the same time, electronic waste accounts for only five percent of the total municipal solid

1. See Intellectual Property High Court of Japan, English Summary of Canon Inc. v. Recycle Assist Co., http://www.ip.courts.go.jp/eng/documents/pdf/g_panel/decision_summary.pdf. For the full text of the decision, see Canon Inc. v. Recycle Assist Co. (Intellectual Property High Ct., Jan. 31, 2006), http://www.ip.courts.go.jp/documents/pdf/g_panel/10021.pdf (last visited Feb. 24, 2007).

2. In April 2004, Japan's Intellectual Property High Court established a Grand Panel system in which a panel of five judges (the "Grand Panel") adjudicates intellectual property cases. See Intellectual Property High Court History, <http://www.ip.courts.go.jp/eng/aboutus/history.html> (last visited Feb. 24, 2007) (on file with author). The Intellectual Property High Court introduced the Grand Panel system in response to requests for reliable, consistent rulings at the high court level. See About Us: Intellectual Property High Court, <http://www.ip.courts.go.jp/eng/aboutus/index.html> (last visited Feb. 24, 2007) (on file with author).

3. See Canon Inc. v. Recycle Assist Co. (Intellectual Property High Ct., Jan. 31, 2006), http://www.ip.courts.go.jp/documents/pdf/g_panel/10021.pdf (last visited Feb. 24, 2007) at 1.

4. *Id.* at 1.

5. *Id.* at 1.

6. GrassRoots Recycling Network, Fact Sheet, http://www.grrn.org/miller_waste/lexmark-facts.html (last visited Feb. 24, 2007).

7. Greenpeace USA, What is E-Waste, <http://www.greenpeace.org/usa/campaigns/toxics/hi-tech-highly-toxic/e-waste> (last visited Feb. 24, 2007).

8. *Id.*

9. *Id.*

waste in the world.¹⁰ Recycling efforts are crucial for reducing the large volume of waste including discarded electronic products.

Independent recycling companies such as Japan's Recycle Assist have developed an ink cartridge recycling industry.¹¹ They collect used products originally manufactured by large companies like Lexmark, Canon, Epson, Hewlett Packard, Fujitsu, NEC, Xerox, and Casio.¹² The recycling companies then refurbish the used products and resell them at a price lower than the original retail price.¹³ Major manufacturers like Hewlett Packard, Lexmark, Canon, and Fuji Photo Film¹⁴ also recycle products that their own consumers used.¹⁵

This Note shows that courts in the U.S. and Japan often do not permit a recycling company's patent infringement simply because the company's recycling activities contribute to the conservation of environmental resources. This Note further suggests that recycling companies in the U.S. and Japan should take measures to continue their recycling activities without violating intellectual property rights by, for example, obtaining patents for their unique recycling methods or purchasing licenses from original manufacturers of electronic products.

Part I discusses the legal doctrine and business practices underlying the cases involving recycling activities and patent infringement in the U.S. and Japan. Next, Part II shows that courts in the U.S. and Japan have been unwilling to legitimize patent infringement on the grounds that the activity contributes to recycling. Finally, Part III presents examples of measures in the U.S., Japan, and Europe that protect intellectual property rights while promoting recycling activities.

10. *Id.*

11. *See, e.g.*, Recycle Assist Co., Ltd., <http://www.recycle-assist.com/> (last visited Nov. 4, 2007).

12. *See, e.g.*, Recycle Assist Co., Ltd., Laser Printer Toner, <http://www.recycle-assist.com/laser/index.html> (last visited Feb. 24, 2007); Recycled Laser Cartridge, <http://www.recycledlaser cartridge.com/store/index.php> (last visited Feb. 24, 2007).

13. *See, e.g.*, Recycle Assist Co. Ltd., *supra* note 11.

14. On October 2, 2006, FUJIFILM Corporation succeeded the business of Fuji Photo Film. FUJIFILM Global, Fact Sheet, <http://www.fujifilm.com/about/profile/factsheet/index.html> (last visited Feb. 24, 2007).

15. *See* Intellectual Property High Court of Japan, *supra* note 1, at 5.

I. THE LAW AND BUSINESS OF PATENT INFRINGEMENT AND RECYCLING

Part I presents the legal and business background of cases involving recycling companies and patent infringement allegations. This Part begins by describing the legal doctrine of patents. It then explains the business system of independent recycling companies. Part I concludes by illustrating original manufacturers' efforts to protect their investment in research and development.

A. Legal Background on Patents

1. Definition of Patents

A patent is a public document published by the federal government, which grants a right to an inventor.¹⁶ The right allows the inventor to exclude others from making, using, marketing, selling, offering for sale, or importing the invention.¹⁷ The federal government grants this right if the invention is novel, useful, and nonobvious.¹⁸ The inventor holds the patent for a period of twenty years from the day the inventor filed for the patent.¹⁹

There are multiple types of patents. Among them are product patents and process patents.²⁰ A product patent covers machines, manufacture, and compositions of matters.²¹ A process patent is a patent for a new and useful method of treating certain materials to create a result.²² Thus, an inventor can obtain a patent for a recycling process or a method for manufacturing ink cartridges.

Large producers of electronic products in the U.S. own many patents that cover printer components and methods for manufacturing ink cartridges. For example, Hewlett Packard's Patent No. 5,428,383 and Patent No. 5,488,402 describe methods to avoid colored ink from bleeding.²³ Lexmark owns Patent No.

16. See ALAN L. DURHAM, *PATENT LAW ESSENTIALS 2* (2d ed. 2004); see also BLACK'S LAW DICTIONARY 1156 (8th ed. 2004); Patent Act, 35 U.S.C. §§ 101–103 (2007).

17. See Patent Act, 35 U.S.C. §§ 101–103 (2007).

18. *Id.*

19. *Id.*

20. *Id.*

21. *Id.*

22. *Id.*; 69 C.J.S. *Patents* § 17 (2006).

23. Method and Apparatus for Preventing Color Bleed in a Multi-ink Printing System, U.S. Patent No. 5,428,383 (filed Aug. 5, 1992); Method and Apparatus for Preventing Color Bleed in a Multi-ink Printing System, U.S. Patent No. 5,488,402 (filed Mar. 10,

6,293,143, which covers an apparatus and a method for detecting the amount of ink left inside an ink cartridge.²⁴

Turning to Japanese manufacturers, Canon's Patent No. 3,278,410 discloses a method for manufacturing the liquid container of an ink jet cartridge.²⁵ Canon's patent also covers machine parts such as the liquid container itself and the package of the container.²⁶ As another example, Seiko Epson holds a patent for an ink tank and an ink-jet recording device.²⁷ Finally, Fuji Photo Film's Patent No. 4,884,087 describes a photographic film package of a camera and the method of making the photographic film package.²⁸

2. Patent Infringement

Patent infringement is an "unauthorized making, using, offering to sell, selling, or importing" of a patented invention.²⁹ These acts infringe a patent if they occur during the lifetime of the patent.³⁰ Patent infringement is a violation of the exclusive right that the federal statute grants to the patentee, the owner of the patent.³¹

To conclude that an alleged infringer has infringed a patent, a court needs to find that the claim at issue in the patent covers the alleged infringer's product or process.³² A claim in a patent is a statement that describes the novel features of the patented invention.³³ A patent claim also defines the scope of the protection that the patent offers.³⁴ Determining whether an alleged infringer has infringed a patent is a two-step process.³⁵ First, a court must

1995). Stephen Shankland, HP Sues Firms that Refill Ink Cartridges (Mar. 29, 2005), http://news.com.com/2102-1041_3-5643687.html?tag=st.util.print (last visited Feb. 24, 2007).

24. Ink Level Sensing Device and Method Therefore, U.S. Patent No. 6,293,143 (filed Mar. 23, 2000).

25. Intellectual Property High Court of Japan, *supra* note 1, at 1.

26. *Id.*

27. Ink-jet Recording Apparatus and Ink Tank Cartridge Thereof, U.S. Patent No. 5,488,401 (filed Aug. 11, 1992).

28. Photographic Film Package and Method of Making the Same, U.S. Patent No. 4,884,087 (filed Aug. 20, 1987).

29. BLACK'S LAW DICTIONARY, *supra* note 16, at 797. *See also* 35 U.S.C. § 271 (2000).

30. 69 C.J.S. *Patents* § 400 (2007).

31. *Id.* *See also* 35 U.S.C. § 271 (2000).

32. C.J.S. *Patents*, *supra* note 30, § 400.

33. BLACK'S LAW DICTIONARY, *supra* note 16, at 1160.

34. *Id.*

35. C.J.S. *Patents*, *supra* note 30, § 400.

interpret the patent claims at issue and determine their scope.³⁶ Since claim interpretation is a question of law, a court, rather than a jury, construes the patent claims.³⁷ The court will review the claim language, examine the patent's specification, and consider how the patent was prosecuted before the U.S. Patent and Trademark Office ("USPTO").³⁸ The second step is to determine whether the alleged infringer's product or process infringes the patent claims construed by the court.³⁹ This step presents a question of fact.⁴⁰

A court can find direct infringement of a patent based on either literal infringement or the doctrine of equivalents.⁴¹ A plaintiff can show literal infringement by demonstrating that the alleged infringer's product or process literally meets every element in the patent claim.⁴² However, the literal scope of the patent claims may not cover the process or the product. In these cases, an alleged infringer can be liable for patent infringement under the doctrine of equivalents.⁴³ Under this doctrine, a court decides whether the allegedly infringing product or process contains an element equivalent to each claimed element of the patented invention.⁴⁴ If the two elements have the same substantive function even though they are not identical, the alleged infringer's process or product infringes the patent under the doctrine of equivalents.⁴⁵

An alleged infringer can assert various defenses to avoid liability for patent infringement.⁴⁶ Common defenses include patent invalidity and a license granted by the patentee to the alleged infringer.⁴⁷

A defendant in a patent infringement lawsuit can assert a defense of patent invalidity if the patent at issue does not meet the statutory

36. *Id.*

37. *See* Markman v. Westview Instruments, 517 U.S. 370, 372 (1996).

38. C.J.S. *Patents*, *supra* note 30, § 400. In Japan, patent prosecution occurs before the Japan Patent Office. *See* Japan Patent Office, <http://www.jpo.go.jp> (last visited Nov. 4, 2007).

39. C.J.S. *Patents*, *supra* note 30, § 400.

40. *Id.*

41. *Id.*

42. *See id.*; *see also* 60 AM. JUR. 2D *Patents* § 920 (2007).

43. BLACK'S LAW DICTIONARY, *supra* note 16, at 513.

44. *Id.* (citing Warner-Jenkinson Co. v. Hilton Davis Chem. Co., 520 U.S. 17, 39–40 (1997)).

45. *Id.* (citing Festo v. Shoketsu Kinzoku Kogyo Kabushiki Co., 535 U.S. 722 (2002)).

46. 69 C.J.S. *Patents* § 436 (2007).

47. *Id.*

criteria of patentability.⁴⁸ In addition, an alleged infringer may contend that the patent is invalid where the patentee procured the patent fraudulently.⁴⁹ Finally, the patent can be invalid if the patentee or its agent engaged in inequitable conduct while prosecuting the patent before the USPTO.⁵⁰

Furthermore, an alleged infringer can avoid liability for patent infringement where the patentee granted a license to the alleged infringer.⁵¹ This defense, however, is unavailable if the alleged infringer violated the conditions of the license.⁵²

The exhaustion doctrine⁵³ offers an alternative defense against patent infringement.⁵⁴ Under the doctrine, a patentee who unconditionally sells a patented item will no longer have the right to control its use and sale.⁵⁵ This doctrine is also called the first sale doctrine.⁵⁶

Similarly, a patentee who sells a patented article grants an implied license to the purchaser to use the article.⁵⁷ Under the implied license, the purchaser of an electronic device, for instance, can only use the physical article it bought—the buyer cannot make similar articles and resell them.⁵⁸

The buyer of a patented machine obtains the right to repair the machine.⁵⁹ The buyer may replace lost or broken parts of the machine.⁶⁰ The act of repair or replacement, however, must not destroy the identity of the machine.⁶¹ Furthermore, the repaired components must not have been patented separately by the patentee.⁶²

On the other hand, a purchaser of a patented, worn-out machine

48. 60 AM. JUR. 2D *Patents* § 892 (2007).

49. *Id.* § 893.

50. *Id.*

51. C.J.S. *Patents*, *supra* note 46, § 436.

52. *Id.*

53. The exhaustion doctrine played a key role in the decision of Japan's Intellectual Property High Court in the *Canon v. Recycle Assist Co.* case. See *infra*, Part II.A.

54. LAWRENCE M. SUNG & JEFF E. SCHWARTZ, *PATENT LAW HANDBOOK* § 4:4 (2006).

55. See BLACK'S LAW DICTIONARY, *supra* note 16, at 1162; see also STEPHEN M. MCJOHN, *INTELLECTUAL PROPERTY: EXAMPLES AND EXPLANATIONS* 227 (2d ed. 2006).

56. SUNG & SCHWARTZ, *supra* note 54, §4:4.

57. MCJOHN, *supra* note 55, at 227.

58. *Id.*

59. 69 C.J.S. *Patents* § 405 (2007).

60. *Id.*

61. *Id.*

62. *Id.*

cannot reconstruct it without obtaining consent from the patentee.⁶³ Neither can the purchaser replace machine components that are not damaged.⁶⁴ Even though repair is permissible, a buyer cannot go beyond repair and reconstruct the machine.⁶⁵ Courts often confront difficulty in distinguishing between acts of repair and reconstruction,⁶⁶ which often entails very fact-specific distinctions.⁶⁷

3. Procedural Issues in Patent Litigation

A plaintiff claiming patent infringement must have possessed legal title of the patent at issue when the alleged infringement occurred.⁶⁸ Such legal title includes ownership of the whole patent or ownership of a right to exclude based on the patent.⁶⁹ A nonexclusive licensee does not have standing to bring a patent infringement action.⁷⁰

Once a plaintiff commences a patent infringement lawsuit, the alleged infringer can move for a declaratory judgment from the court.⁷¹ The court will then determine whether the patent is in fact infringed.⁷² However, a court will not issue a declaratory judgment where the infringement question is moot or if a declaratory judgment is likely to be ineffective.⁷³

A court may grant a preliminary injunction to a patentee against an alleged infringer.⁷⁴ Courts generally consider four factors in deciding whether to grant a motion for a preliminary injunction.⁷⁵ The first factor is whether the patentee has a reasonable likelihood of succeeding on the merits at trial.⁷⁶ Second, the court considers

63. *Id.*

64. *Id.*

65. *Id.*

66. *Id.*

67. MCJOHN, *supra* note 55, at 228.

68. *Id.* at 235.

69. *Id.* at 235–36.

70. *Id.* at 236.

71. 26 C.J.S. *Declaratory Judgments* § 99 (2007).

72. *Id.*

73. *Id.* For example, a district court dismissed an action for declaratory judgment where the court declined to accept jurisdiction. *See id.*; *see also* Proler Steel v. Luria Bros., 225 F.Supp. 412, 414 (S.D. Tex. 1964).

74. MCJOHN, *supra* note 55, at 236.

75. JOHN GLADSTONE MILLS III, DONALD C. REILEY III, & ROBERT C. HIGHLEY, *PATENT LAW FUNDAMENTALS* § 20:90 (2d ed. 2007).

76. *Id.*

whether the patent owner will suffer irreparable harm if the court does not grant a preliminary injunction.⁷⁷ The third factor is whether the potential injury to the patentee is greater than the harm that the alleged infringer may suffer due to the preliminary injunction.⁷⁸ Fourth, the court considers whether a preliminary injunction will have a positive impact on the public interest.⁷⁹

Meanwhile, if a patent infringement case reaches a jury, which finds that an alleged infringer is liable for patent infringement, a court may issue a permanent injunction against the infringer.⁸⁰ The permanent injunction forbids the infringer from performing activities that further infringe the patent.⁸¹

B. The Business System of Independent Recycling Companies

Independent recycling companies collect and refurbish used products produced by other manufacturers. The recycling companies may perform the refurbishment themselves or contract with a separate manufacturer to reform the product. The recycling companies then resell the refurbished products to consumers at a lower price than the original retail price. Such aftermarket recycling companies are present in various industries in the U.S. and Japan. These companies recycle products such as disposable cameras, golf balls, plastic products, and ink cartridges.⁸²

1. Example of a Recycling Company in the Ink Cartridge Business

Recycle Assist is an example of an independent recycling company in Japan that collects used ink cartridges originally manufactured by other large companies such as Canon.⁸³ After collecting the used cartridges, Recycle Assist sends them to a factory overseas.⁸⁴ The factory dismantles and cleans the ink cartridges.⁸⁵ The factory then refills each cleaned ink tank with ink

77. *Id.*

78. *Id.*

79. *Id.*

80. 60 AM. JUR. 2D *Patents* § 943 (2007).

81. *Id.*

82. *See infra* Part I.B.1.; Part II.B.

83. Recycle Assist Co. Ltd., *supra* note 11.

84. *Id.*

85. *Id.*

and tests whether the recycled ink cartridge will print properly.⁸⁶ Recycle Assist next imports the recycled ink cartridges back from the foreign factory.⁸⁷ Recycle Assist finally sells the recycled ink cartridges to consumers in Japan at a price lower than the original retail price.⁸⁸ Recycle Assist has experienced increased sales for more than six years.⁸⁹ Its proceeds have increased each year from 2001 to 2006.⁹⁰ In fact, the amount of expected proceeds in 2006 was more than three times the proceeds in the year 2001.⁹¹

C. Original Manufacturers' Efforts to Protect their Investments in Technology

Many original manufacturers of electronic products like Hewlett Packard, Lexmark, Canon, Seiko Epson, and Fuji Photo Film make substantial investments in research and development. For example, Canon's research and development investment amounts to at least ten percent of its net sales.⁹² As another example, Lexmark has increased its research and development expenditures continuously since 2002.⁹³ In 2005, Lexmark's expenditure in research and development was \$336 million.⁹⁴

High research and development costs motivate manufacturers to protect their investments in technology from potential patent infringers. For instance, Hewlett Packard's senior vice president of the Supplies, Imaging, and Printing Group declared that "HP spends millions of dollars annually in R&D to create innovations that benefit our customers, and we are rigorous in our protection of this investment."⁹⁵ Lexmark has also made various kinds of efforts to protect its research and development investments in

86. *Id.*; Intellectual Property High Court of Japan, *supra* note 1, at 1.

87. Recycle Assist Co. Ltd., *supra* note 11.

88. *Id.*

89. Recycle Assist Co. Ltd., Overview of Company, <http://www.recycle-assist.com/company/index.html> (last visited Nov. 4, 2007).

90. *Id.*

91. *Id.*

92. Canon, Global Research & Technology Network, <http://www.canon.com/technology/global/index.html> (last visited Feb. 24, 2007).

93. Lexmark, 2005 Annual Report 3, http://media.corporate-ir.net/media_files/irol/92/92369/reports/lxk_AR2005.pdf (last visited Feb. 24, 2007).

94. *Id.*

95. Hewlett Packard, HP Protects Intellectual Property in Ink Technology, Oct. 20, 2005, <http://www.hp.com/hpinfo/newsroom/press/2005/051020a.html> (last visited Feb. 24, 2007).

response to potential patent infringement by other companies.

In May 1997, Lexmark started a Prebate Marketing Program for its Optra S printer cartridges.⁹⁶ Lexmark offered consumers an option to purchase a Prebate Optra S printer cartridge for \$30 less than a regular cartridge.⁹⁷ A regular Optra S printer cartridge costs \$288.⁹⁸ In return for offering a discount, Lexmark made a request to the purchasers of the Prebate ink cartridge.⁹⁹ Lexmark instructed that once the consumers used up the ink, they should return the ink cartridge to Lexmark or throw it away.¹⁰⁰

The licensing agreement on the package stated that the patented ink cartridge is subject to a “Single Use Only” restriction.¹⁰¹ The licensing agreement further stated that “[i]t is a violation of this agreement and/or it is unlawful to resell, reuse, refill or remanufacture” the ink cartridge.¹⁰² The agreement also informed consumers that they would be bound to the licensing agreement by opening the package.¹⁰³ Thus, Lexmark’s Prebate Program made it difficult for third-party companies to collect and refurbish the ink cartridges.

In addition, Lexmark has developed technological controls to avoid use of non-Lexmark ink cartridges in Lexmark computers. For example, Lexmark places a chip in its ink cartridges.¹⁰⁴ The chip detects the amount of ink left in the cartridge.¹⁰⁵ In addition, the chip makes it impossible for the Lexmark printer to function if a consumer uses a non-Lexmark ink cartridge in the printer.¹⁰⁶

Furthermore, Lexmark has obtained a patent for an apparatus and a method for preventing other companies from refilling Lexmark’s ink cartridge tank, entitled “Disabling Refill and Reuse of an Ink Jet Print Head.”¹⁰⁷ This patent illustrates Lexmark’s efforts to deter other companies from remanufacturing and

96. GrassRoots Recycling Network, *supra* note 6.

97. *Id.*

98. *Id.*

99. *Id.*

100. *Id.*

101. *Id.*

102. *Id.*

103. *Id.*

104. Lisa DiCarlo, Printer Profits in Peril, http://www.forbes.com/2003/02/06/cx_id_0206lxk_print.html (last visited Feb. 24, 2007).

105. *Id.*

106. *Id.*

107. *Id.* Disabling Refill and Reuse of an Ink Jet Print Head, U.S. Patent No. 6,099,101 (filed Apr. 6, 1998).

reselling used Lexmark ink cartridges.

II. RECYCLING EFFECTS DO NOT LEGITIMIZE PATENT INFRINGEMENT IN THE U.S. AND JAPAN

Part II shows that courts in the U.S. and Japan have not accepted recycling companies' contribution to resource conservation as an excuse for patent infringement. This section begins by analyzing the *Canon v. Recycle Assist Co.* case in Japan. It then turns to similar cases in the U.S. This Part describes cases where U.S. courts found that recycling companies' activities were impermissible due to patent infringement. It then shows that patentees in similar cases have lost for reasons unrelated to the protection of environmental resources. Part II concludes by demonstrating that courts in the U.S. have found that manufacturers' measures to prevent unauthorized reselling of their products are legal.

A. *Canon v. Recycle Assist Co.* Case in Japan

On January 31, 2006, Japan's Intellectual Property High Court issued a ruling on *Canon v. Recycle Assist Co.*¹⁰⁸ The case presented a conflict between environmental protection activities and patent infringement. The Intellectual Property High Court's ruling demonstrated that a recycling company's contribution to resource conservation does not legitimize the company's infringement of patents.¹⁰⁹

1. Description of *Canon v. Recycle Assist Co.*

Plaintiff Canon owns a patent for an ink cartridge.¹¹⁰ The patent, Patent No. 3,278,410, covers components of the ink cartridge and a method for manufacturing the ink cartridge.¹¹¹ Claim 1 of the patent describes the ink tank of the ink cartridge, while Claim 10 teaches the process for manufacturing the ink tank.¹¹² After manufacturing the ink tanks, Canon sells them in the market.¹¹³

108. Intellectual Property High Court of Japan, *supra* note 1, at 1.

109. *See id.* at 5.

110. *Id.* at 1. The title of the patent is "[L]iquid container, manufacturing method of the container, package of the container, ink jet head cartridge consisting of the container integrated with a recording head, and liquid jet recorder." *Id.*

111. *Id.* at 1.

112. *Id.* at 1.

113. *Id.* at 1.

Defendant Recycle Assist is an independent recycling company in Japan.¹¹⁴ It collects used ink cartridges, including Canon-brand ink cartridges, and sends them to a factory.¹¹⁵ The factory manufactures Recycle Assist's products by refilling used Canon-brand ink cartridges with ink.¹¹⁶ Canon and its licensees sold the Canon-brand ink cartridges to consumers in Japan and abroad before Recycle Assist collected and refurbished the used ink cartridges.¹¹⁷

In April 2004, Canon sued Recycle Assist in the Tokyo District Court for patent infringement.¹¹⁸ Canon requested that the Tokyo District Court issue an injunction against Recycle Assist.¹¹⁹ However, the Tokyo District Court ruled in favor of Recycle Assist, finding that Recycle Assist's activities did not constitute patent infringement.¹²⁰ Canon appealed to Japan's Intellectual Property High Court.¹²¹

Canon alleged that Recycle Assist infringed Claims 1 and 10 of Canon's Patent No. 3,278,410.¹²² Canon sought injunctive relief to prevent Recycle Assist from further importing and selling the refurbished ink cartridges.¹²³ Canon also requested that the Court order Recycle Assist to discard the products.¹²⁴

Recycle Assist responded that Canon's Patent No. 3,278,410 had been exhausted.¹²⁵ Relying on the exhaustion doctrine,¹²⁶ Recycle Assist thus argued that Canon could not exercise its patent rights against Recycle Assist's products that were produced from ink cartridges that Canon sold overseas.¹²⁷

In response, Canon maintained that it should be able to exercise

114. See Recycle Assist Co. Ltd., *supra* note 11.

115. *Id.* See *supra* Part I.B.1.

116. Intellectual Property High Court of Japan, *supra* note 1, at 1.

117. *Id.*

118. Tony Smith, Canon Loses Printer Recycling Case (Dec. 9, 2004), http://www.the-register.co.uk/2004/12/09/canon_loses_printer_case/print.html (last visited Feb. 24, 2007).

119. Canon Inc. v. Recycle Assist Co., (Tokyo D. Ct., 2004), *available at* http://www.ip.courts.go.jp/documents/pdf/g_panel/10021-org.pdf (last visited Feb. 24, 2007).

120. *Id.*; see also Tony Smith, *supra* note 118.

121. Intellectual Property High Court of Japan, Grand Panel Cases, http://www.ip.courts.go.jp/eng/documents/g_panel.html (last visited Feb. 24, 2007).

122. Intellectual Property High Court of Japan, *supra* note 1, at 1.

123. *Id.* at 2.

124. *Id.* at 2.

125. *Id.* at 2.

126. See *supra* Part I.A.2.

127. Intellectual Property High Court of Japan, *supra* note 1, at 2.

its patent rights.¹²⁸ Canon argued that Recycle Assist remanufactured ink cartridges that Claim 1 of Patent No. 3,278,410 covers, using the process described in Claim 10 of the patent.¹²⁹ Remanufacturing is impermissible under the exhaustion doctrine even though repair is allowed.¹³⁰

The Grand Panel in the Intellectual Property High Court reversed the Tokyo District Court's ruling and found that Recycle Assist's activities infringed Canon's patent.¹³¹ The Grand Panel then granted an injunction for Canon.¹³²

The Grand Panel noted that both parties admitted that Claims 1 and 10 of Canon's patent covered Recycle Assist's products and manufacturing methods.¹³³ Hence, the issue before the Grand Panel was whether Canon could exercise its patent rights in light of the exhaustion doctrine.¹³⁴

The Grand Panel held that Canon is entitled to exercise its patent rights for both Claims 1 and 10.¹³⁵ The Grand Panel found that Claim 1 was not exhausted because Recycle Assist had modified or replaced "the whole or part of the components that constitute an essential portion of the patented product."¹³⁶ The Grand Panel further concluded that Claim 10 was not exhausted either, because Recycle Assist had modified or replaced essential parts of the patented ink cartridge.¹³⁷

2. Analysis of *Canon v. Recycle Assist Co.*

The *Canon v. Recycle Assist Co.* case involved issues of environmental protection and intellectual property. However, the Grand Panel's ruling was based on legal doctrines in patent law. The Grand Panel applied the exhaustion doctrine to determine whether Canon could exercise its patent rights against Recycle Assist and whether Recycle Assist is therefore liable for patent infringement. Thus, the Grand Panel's main focus was on

128. *Id.* at 2.

129. *Id.* at 2.

130. *See supra* Part I.A.2.

131. Intellectual Property High Court of Japan, *supra* note 1, at 1.

132. *Id.* at 1.

133. *Id.* at 2.

134. *Id.* at 2-3.

135. *Id.* at 3-9.

136. *Id.* at 3, 4-5.

137. *Id.* at 8.

adjudicating the case under intellectual property law.

The Grand Panel's ruling sent a message that activities infringing patent rights cannot be excused for the reason that the activities contribute to environmental conservation. In the *Canon v. Recycle Assist Co.* case, Recycle Assist voiced its concern that allowing Canon to exercise its patent will "threaten the market for recycled products."¹³⁸ In response, the Grand Panel acknowledged the significance of environmental conservation.¹³⁹ However, Recycle Assist's concern about the case's impact on the recycling industry did not persuade the Court to change its conclusions. The Court emphasized that recycling activities will be permissible as long as they do not violate patents. "No infringement should be found for the manufacture or sale of recycled products," the Grand Panel stated, "as long as the genuine products are not patented or the patent has been exhausted."¹⁴⁰ In this way, the Grand Panel's ruling shows that environmental-friendly activities are not exempted from the doctrines of patent infringement.

B. U.S. Cases Involving Recycling and Patent Infringement

Similarly, courts in the U.S. adjudicating patent infringement cases against recycling companies have based their decisions on intellectual property law. In a case where a patent holder prevailed over a recycling company, the patent holder won because it met its burden of proof under patent law.¹⁴¹ On the other hand, recycling companies have prevailed when the patent holder's legal action had procedural defects or when the patentee could not establish patent infringement by the recycling companies.¹⁴² In these ways, recycling companies' contribution to environmental conservation has not played a large role in courts' decisions in the U.S.

138. *Id.* at 5.

139. *Id.* at 5 ("Since conservation of the environment is important for ensuring wholesome and cultured living for the current and future citizens and achieving human welfare, the fundamental philosophy of conservation of the environment must also be respected to the greatest possible extent in construing the provisions of the Patent Law.").

140. *Id.* at 5.

141. *See infra* Part.II.B.1.

142. *See infra* Part.II.B.2.

1. Court Rules for Patent Holder in *Fuji Photo Film Co. v. Jazz Photo Corp.*

Fuji Photo Film Co. v. Jazz Photo Corp. illustrates that courts in the U.S. are guided primarily by intellectual property law when they adjudicate cases concerning patent rights and recycling. On June 23, 1999, Fuji Photo Film sued Jazz Photo in the U.S. District Court for the District of New Jersey alleging patent infringement.¹⁴³ Fuji Photo Film owns patents related to disposable cameras.¹⁴⁴ The disposable cameras are also called “lens fitted film packages.”¹⁴⁵ When Fuji Photo Film first marketed the product, it intended that the cameras be disposable after the purchaser used the product once.¹⁴⁶ In fact, Fuji Photo Film’s U.S. Patent No. 4,884,087 states that “it will be impossible to refill a new film into the used film package . . . for reuse” after opening the package.¹⁴⁷

Defendant Jazz Photo imports and sells refurbished disposable cameras.¹⁴⁸ It purchased the outer shells of disposable cameras originally manufactured by Fuji Photo Film.¹⁴⁹ Jazz Photo next placed new film into the used outer shells.¹⁵⁰ Jazz Photo then resold the refurbished disposable cameras.¹⁵¹

The U.S. District Court for the District of New Jersey found that Jazz Photo directly infringed Fuji Photo Film’s patents by importing, selling, and using over forty million refurbished disposable cameras originally manufactured and sold by Fuji Photo Film.¹⁵² Jazz Photo appealed to the U.S. Court of Appeals for the Federal Circuit.¹⁵³

On appeal, Jazz Photo asserted the affirmative defense that it repaired the disposable cameras as permitted under the exhaustion doctrine.¹⁵⁴ However, the Federal Circuit found that the district

143. *Fuji Photo Film Co. v. Jazz Photo Corp.*, 249 F. Supp. 2d 434, 440 (D.N.J. 2003).

144. *Fuji Photo Film Co. v. Jazz Photo Corp.*, 394 F.3d 1368, 1370 (Fed. Cir. 2005).

145. *Id.* at 1368.

146. *Id.* at 1370.

147. Photographic Film Package and Method of Making the Same, U.S. Patent No. 4,884,087 (filed Aug. 20, 1987).

148. *See Fuji Photo Film Co.*, 394 F.3d at 1368, 1371.

149. *Id.* at 1371.

150. *Id.*

151. *Id.*

152. *Fuji Photo Film Co.*, 249 F. Supp. 2d at 434, 452.

153. *Fuji Photo Film Co.*, 394 F.3d at 1368.

154. *Id.* at 1373.

court correctly applied the exhaustion doctrine.¹⁵⁵ Thus, the Federal Circuit affirmed the district court's finding that Jazz Photo was liable for direct infringement of Fuji Photo Film's patents.¹⁵⁶

2. Cases in which Patent Holders Lost against Recycling Companies for Reasons Unrelated to the Companies' Contribution to Recycling

This Part describes cases in the U.S. where patentees lost in patent infringement cases against recycling companies. The examples arise in the tire, golf ball, and paper industries. In none of these cases did the recycling companies' contribution to the protection of environmental resources influence the court's ruling. Instead, each court's decision was based on patent law and procedural rules.

In the first example, a plaintiff lost against a recycling company due to a lack of standing. On October 20, 1993, Gaia Technologies sued Recycled Products Corporation for patent and trademark infringement in the U.S. District Court for the Southern District of Texas.¹⁵⁷ The case involved a patent covering methods for manufacturing products like fence posts and buckets from recycled tires.¹⁵⁸ James Turner developed the patent, which Gaia Technologies later acquired.¹⁵⁹ A jury found that Recycled Products Corporation was liable for patent infringement.¹⁶⁰ Recycled Products Corporation appealed to the U.S. Court of Appeals for the Federal Circuit.¹⁶¹ The Federal Circuit reversed and held against Gaia Technologies.¹⁶² The Federal Circuit stated that, for Gaia Technologies to have standing, it needed to have owned the patent at issue when it filed the patent infringement action.¹⁶³ The Federal Circuit concluded that Gaia Technologies lacked standing since it failed to prove that it owned the patent on October 20, 1993 when it filed the suit.¹⁶⁴ In this way, Recycled

155. *Id.* at 1381.

156. *Id.*

157. *Gaia Technologies Inc. v. Recycled Products Corp.*, 175 F.3d 365, 369 (5th Cir. 1999).

158. *Id.* at 368.

159. *Id.*

160. *Id.* at 369.

161. *Id.*

162. *Id.*

163. *Id.*

164. *Id.* at 370.

Products Corporation prevailed because Gaia Technologies suffered from a procedural defect.

Next, in a case involving the golf ball industry, the recycler prevailed because the patentee could not satisfy its burden for obtaining a preliminary injunction. On January 15, 2002, Acushnet sued Nitro Leisure Products (“Nitro”) claiming patent infringement.¹⁶⁵ Acushnet owns patents that cover methods for manufacturing golf balls.¹⁶⁶ Nitro recycles approximately 30 percent of used golf balls.¹⁶⁷ It purchases used golf balls manufactured by other companies including Acushnet.¹⁶⁸ Nitro then washes the used golf balls, re-coats them, and packages the golf balls.¹⁶⁹ Nitro resells the recycled golf balls at a discount price.¹⁷⁰

Acushnet alleged that Nitro’s refurbished golf balls infringed Acushnet’s patents.¹⁷¹ In particular, Acushnet asserted that the recycled golf balls contain a number of Acushnet golf ball compositions, and that Nitro used Acushnet’s patented golf ball restoration method to refurbish the golf balls.¹⁷²

On August 8, 2002, the U.S. District Court for the Southern District of Florida rejected Acushnet’s patent infringement claim for lack of evidence.¹⁷³ The district court stated that Acushnet failed to provide sufficient information to demonstrate a likelihood of succeeding on its patent infringement claim.¹⁷⁴ The U.S. Court of Appeals for the Federal Circuit affirmed.¹⁷⁵ The environmental impact of Nitro’s recycling activities was not a basis for either of the courts’ decisions.

Furthermore, in a case concerning the paper industry, the recycler prevailed because the patentee could not present sufficient evidence to overcome summary judgment. Ahlstrom Machinery

165. *In re Nitro Leisure Products, L.L.C.*, No. 02-14008-CIV., 2002 WL 32344948, *1 (S.D. Fla. Aug. 8, 2002).

166. *Id.* at *1.

167. *Id.* at *2.

168. *Id.*

169. *Id.*

170. *Id.*

171. *Id.* at *7.

172. *Id.*

173. *Id.* at *10.

174. *Id.*

175. *Nitro Leisure Products, L.L.C. v. Acushnet Co.*, 341 F.3d 1356, 1356 (Fed. Cir. 2003).

(“Ahlstrom”) operates two waste paper recycling plants.¹⁷⁶ Ahlstrom initiated an action for a declaratory judgment that its paper recycling plants did not infringe a process patent owned by Jean Marie Clement (“Clement”).¹⁷⁷ Clement counterclaimed, alleging that Ahlstrom infringed her patent.¹⁷⁸ Ahlstrom then moved for summary judgment.¹⁷⁹

The U.S. District Court for the District of Columbia granted Ahlstrom’s summary judgment motion.¹⁸⁰ The court concluded that Ahlstrom did not infringe Clement’s patent.¹⁸¹ To reach this conclusion, the court analyzed the claims and the prosecution history of Clement’s process patent.¹⁸² The court also examined whether Ahlstrom literally infringed Clement’s patent.¹⁸³ The court thus granted Ahlstrom’s motion based on its analysis under patent law. It did not consider whether Ahlstrom’s paper recycling plants contributed to environmental conservation.

C. Court in *ACRA v. Lexmark* Endorsed Measures to Avoid Unauthorized Reselling

Many original manufacturers have responded to the activities of recycling companies by taking measures to prevent the recycling companies from refurbishing and reselling their used products without proper authorization. Examples include Lexmark’s Prebate Program and its placement of chips in the ink cartridges to avoid resale of its products.¹⁸⁴ A court in the U.S. has found that such preventive measures are permissible.¹⁸⁵

Lexmark administered a Prebate Program to restrict other companies’ abilities to refurbish and resell used Lexmark ink

176. Ahlstrom Machinery, Inc. v. Clement, 13 F. Supp. 2d 45, 46 (D.D.C. 1998).

177. *Id.*

178. *Id.*

179. *Id.*

180. *Id.* at 51.

181. *Id.* at 45.

182. *Id.* at 47–51.

183. *Id.* The court conducted this three-step analysis for four patent claims at issue. *Id.* at 47. For example, the court interpreted “room temperature” to mean a temperature in the range of 20°C to 25°C. In its infringement analysis, the court held that there is no genuine issue of material fact as to whether Ahlstrom’s recycling plant operates at a temperature below 25°C. *Id.* at 48.

184. *See supra* Part I.C.

185. *See infra* Part II.C.

cartridges.¹⁸⁶ Under the Prebate Program, Lexmark offered a discount to consumers of ink cartridges.¹⁸⁷ In exchange, consumers agreed to return used ink cartridges to Lexmark or its agent.¹⁸⁸

Arizona Cartridge Remanufacturers Association (“ACRA”) is an association of wholesalers that sell remanufactured ink cartridges.¹⁸⁹ The wholesalers collect empty Lexmark ink cartridges and remanufacture them.¹⁹⁰

ACRA sued Lexmark, alleging that Lexmark’s Prebate Program constitutes deceptive or unfair business practice under California’s unfair competition laws.¹⁹¹ In particular, ACRA claimed that the Prebate Program violated sections 17200 and 17500 of the California Business and Professions Code.¹⁹²

The U.S. District Court for the Northern District of California rejected ACRA’s claims and upheld Lexmark’s Prebate Program.¹⁹³ The district court found that it is lawful for Lexmark to restrict the resale of used ink cartridges under the Prebate Program.¹⁹⁴ The district court relied on a decision by the U.S. Court of Appeals for the Federal Circuit.¹⁹⁵ In *Mallinckrodt, Inc. v. Medipart, Inc.*, the Federal Circuit allowed patent holders to restrict the use of their patented medical devices after sale.¹⁹⁶

ACRA appealed the district court’s decision.¹⁹⁷ However, the U.S. Court of Appeals for the Ninth Circuit affirmed the district court’s ruling.¹⁹⁸ The Ninth Circuit determined that Lexmark’s Prebate Program did not violate California’s unfair competition and false advertising laws.¹⁹⁹

In the same case, ACRA challenged Lexmark’s use of electronic chips to prevent other companies from refurbishing the used ink

186. *See supra* Part I.C.

187. *Ariz. Cartridge Remanufacturers Ass’n, Inc. v. Lexmark Int’l, Inc.*, 421 F.3d 981, 983 (9th Cir. 2005) [hereinafter *ACRA II*].

188. *Id.*

189. *Id.*

190. *Id.*

191. *Ariz. Cartridge Remanufacturers Ass’n, Inc. v. Lexmark Int’l, Inc.*, 290 F. Supp. 2d 1034, 1039 (N.D. Cal. 2003) [hereinafter *ACRA I*].

192. *Id.*

193. *Id.* at 1034.

194. *Id.* at 1045, 1050.

195. *Id.* at 1044.

196. *See Mallinckrodt, Inc. v. Medipart, Inc.* 976 F.2d 700, 709 (Fed. Cir. 1992).

197. *ACRA II* at 981.

198. *Id.*

199. *Id.*

cartridges.²⁰⁰ ACRA alleged that Lexmark's use of technical control precludes market competition.²⁰¹

The U.S. District Court for the Northern District of California ruled in favor of Lexmark.²⁰² The district court found that ACRA failed to show that Lexmark engaged in unfair competition by placing chips in its patented ink cartridges.²⁰³ The U.S. Court of Appeals for the Ninth Circuit affirmed the district court's determination.²⁰⁴ The Ninth Circuit concluded that Lexmark did not violate California's unfair competition laws by placing chips in its ink cartridges.²⁰⁵

In this way, courts in the U.S. have endorsed original manufacturers' efforts to prevent companies from refurbishing and reselling their products without authorization. These decisions protect the intellectual property that manufacturers have developed by making significant investments. At the same time, these decisions may act as a disincentive for independent recycling companies trying to resell recycled goods made from patented products.

III. PURSUING RECYCLING ACTIVITIES WHILE PROTECTING PATENT RIGHTS

Part III considers how recycling activities can be compatible with the protection of patent rights. This Part begins by introducing efforts in New York State and the European Union to promote the remanufacturing of patented products. The section then describes how original manufacturers are already conducting recycling activities. Part III concludes by analyzing various measures that recycling companies can take under current intellectual property law in the U.S. and Japan to pursue recycling without infringing patent rights.

200. *Id.* at 981, 984.

201. *Id.* at 989.

202. *ACRA I* at 1034.

203. *Id.* at 1050.

204. *ACRA II* at 989.

205. *Id.* at 981, 989.

A. Efforts to Facilitate Recycling Activities

1. Existing Movements to Promote Refurbishing of Patented Products

There have been efforts in the U.S. and Europe to foster the remanufacturing of used electronic products. Proposed legislation in New York and Europe are two notable examples. These movements occurred in response to measures by original manufacturers to prevent reselling of their patented products.

Legislation was introduced in New York State in response to Lexmark's Prebate Program.²⁰⁶ The proposed legislation would prohibit original manufacturers from selling their products to the State of New York if the manufacturers restricted the refurbishing and recycling of their products.²⁰⁷ In addition, the suggested legislation would establish a preference for buying remanufactured or recycled products.²⁰⁸

This legislation aims to facilitate recycling activities by discouraging original manufacturers from taking measures to prevent unauthorized refurbishing. Furthermore, it attempts to increase the consumption of remanufactured goods by introducing a purchasing preference for recycled items. Thus, the legislation arguably was introduced with the commitment to advance recycling activities that serve a significant and worthy purpose of preserving natural resources.

An analogous law was suggested in Europe. In December 2004, the European Parliament voted to introduce a law that would disallow original manufacturers from placing chips in their ink cartridges to prevent refurbishing and reselling.²⁰⁹ This suggestion was made in response to ink cartridge suppliers' concern that the placement of control chips in ink cartridges discouraged production of replacement cartridges.²¹⁰ Similar to the legislation introduced in New York State, the proposed European law was

206. See Assemb.B. 10868, 221st Leg. (N.Y. 1997); see also GrassRoots Recycling Network, *supra* note 6.

207. *Id.*

208. *Id.*

209. EU Considers Lexmark Ink Cartridge Probe, *Recycling Today Magazine News* (Jan. 15, 2004), <http://www.recyclingtoday.com/news/news.asp?ID=5197&SubCatID=20&CatID=8> (last visited Feb. 24, 2007).

210. *Id.*

designed to foster the recycling of ink cartridges.²¹¹

2. Original Manufacturers Already Engage in Recycling Activities

Original manufacturers also are recycling their own products for environmental conservation. Courts in the U.S. and Japan have acknowledged that many original manufacturers of electronic products already are engaged in recycling activities. For example, Japan's Intellectual Property High Court noted that Canon is recycling its used Canon-brand ink cartridges to produce cement.²¹² In a U.S. case involving disposable cameras, the U.S. Court of Appeals for the Federal Circuit acknowledged that Fuji Photo Film started its own recycling program in 1991.²¹³ Furthermore, the U.S. Court of Appeals for the Ninth Circuit recognized Lexmark's statement that it recycles used ink cartridges by collecting them through its Prebate Program.²¹⁴

When an ink cartridge manufacturer recycles its products in these ways, the manufacturer clearly does not infringe the patents that it owns. Patent law allows a patentee to refurbish and resell its own patented products.²¹⁵ Parties other than the patent owner and its licensees are excluded from making, using, marketing, selling, offering for sale, or importing the patented invention.²¹⁶

B. Measures that Recycling Companies can Take under Current Law

Recycling companies can take various measures to pursue their recycling activities under existing intellectual property law in the U.S. and Japan without exposing themselves to legal or financial risk. Examples include buying insurance, purchasing licenses from original manufacturers, and obtaining patents for unique recycling processes and products.

211. *Id.*

212. Intellectual Property High Court of Japan, *supra* note 1, at 5.

213. Fuji Photo Film Co., 394 F.3d at 1370–71.

214. *ACRA II* at 984.

215. *See* 35 U.S.C. §§ 101-1-3 (2007).

216. *See id.* *See also supra* Part I.A.1.

1. Obtaining Insurance

Some remanufacturing companies have purchased insurance and indemnification policies that cover liability for patent infringement. An example is Nu-kote International, Inc. (“Nu-kote”), which produces and sells replacement cartridges and refills for printers.²¹⁷ Nu-kote purchased a \$1 million insurance policy from the Employers Insurance of Wausau (“Wausau”) that covered patent infringement.²¹⁸ Nu-kote also secured a patent infringement indemnification agreement with the American International Specialty Lines Insurance Company with a limit of \$25 million.²¹⁹ Nu-kote relied on these policies when it was sued by Canon and Seiko Epson for patent infringement.²²⁰ Wausau paid Nu-kote \$9,031,431.77 for *Canon v. Nu-kote*, and further paid \$6,769,457.75 for Nu-kote’s defense in the lawsuit that Seiko Epson filed.²²¹ In this way, buying an insurance policy covering liability for patent infringement may reduce the amount of litigation expenses and damages that recycling companies must pay when an original manufacturer sues them for patent infringement.

However, this measure does not solve the problem of avoiding conduct that leads to patent infringement. Purchasing liability insurance might create an incentive for remanufacturers to continue potentially infringing activities at the risk of being sued for patent infringement.

Moreover, some remanufacturing companies may experience legal disputes when they attempt to collect the proceeds of an insurance policy. For instance, after ABB Flakt, Inc. and Combustion Engineering, Inc. purchased a general liability insurance policy and were sued for patent infringement, the companies sought indemnification under the insurance policy.²²² However, the insurer refused to make any payments, arguing that

217. *Employers Ins. of Wausau v. Am. Int’l Specialty Lines Ins. Co.*, No. C-02-04976 RMW, 2005 WL 1220945 at *1, (N.D. Cal. May 23, 2005).

218. *Id.*

219. *Id.*

220. *Id.*

221. *Id.*

222. *See ABB Flakt, Inc. v. Nat’l Union Fire Ins. Co. of Pittsburgh, P.A.*, No. 94C-11-024-JEB, 1998 WL 437137, at *1. (Del. Super. Ct. June 10, 1998). The Court granted the insurer’s motion for summary judgment, finding that the insurance policy at issue did not cover patent infringement. *Id.* at *10.

the policy did not cover patent infringement.²²³ The insurer further asserted that, even if the general policy did cover patent infringement, the companies' attempt to collect insurance proceeds for liability due to their intentional infringing conduct was against public policy.²²⁴ Thus, although some insurance policies may provide some protection against liability for patent infringement, companies still carry the risk of not being able to obtain actual proceeds from an expensive insurance policy.

2. Purchasing Licenses from Original Manufacturers

Another option for recycling companies is to purchase licenses from original manufacturers that allow refurbishing of the patented invention. Having a license from a patentee is a defense for patent infringement, provided that the licensee does not violate any terms of the license.²²⁵

To illustrate how a license can immunize allegations of patent infringement, a company called the NCR Corporation used its patent licensing agreement with the Lemelson Medical, Education and Research Foundation ("Lemelson") to shield potential liability for infringing patents.²²⁶ In early 1999, NCR Corporation entered into a patent licensing agreement that permitted NCR Corporation to repair and remanufacture the patented inventions.²²⁷ The licensing fee was \$960,000.²²⁸ After Lemelson advised NCR Corporation's customers that their use of NCR's products infringed Lemelson's patents, NCR Corporation sought a declaratory judgment that its licensing agreement immunized its customers from liability for patent infringement.²²⁹ In response, the U.S. District Court for the Southern District of New York agreed with NCR Corporation, and the U.S. Court of Appeals for the Second

223. *Id.* at *1.

224. *Id.*

225. *See supra* Part I.A.2.

226. *See* NCR Corp. v. Lemelson Med., Educ. and Research Found., No. 99-CV-3017, 2001 WL 1911024, at *1 (S.D.N.Y. Apr. 2, 2001).

227. *Id.* at *4. The Patent Licensing Agreement stated, "[s]ubject to . . . exclusions . . . , the Lemelson Foundation Partnership hereby grants to Licensee a nonexclusive, and fully paid-up license under the Licensed Patents: . . . to practice any and all inventions claimed therein either in support of or directly in the manufacture (*including repair and remanufacture*) of products or providing of services in the Licensed Fields and only in the Licensed Fields . . ." *Id.* (emphasis added).

228. *Id.* at *2.

229. *Id.* at *1, *3.

Circuit later affirmed the district court's decision.²³⁰ Therefore, although purchasers of licenses will incur high licensing fees, their remanufacturing and recycling activities are likely to be authorized under patent law if they have a valid license.

3. Developing Patents for Unique Refilling Systems

Recycling companies also may invent their own systems for refilling used ink cartridges and then apply for patents covering their inventions. Ricoh is an example of a Japanese recycling company that has actively designed new recycling systems.²³¹ For instance, it developed a method called a soft toner cartridge refilling system.²³² Ricoh's ink cartridge consists of a hard exterior container and a soft interior case.²³³ The hard container can be reused many times and the user only needs to replace the soft interior case when the ink cartridge is empty.²³⁴ According to Ricoh, using the soft toner cartridge refilling system lowers "the environmental impact caused by toner cartridges throughout their life cycles" by more than 70 percent compared to ink cartridges that can be used only once.²³⁵ In addition, Ricoh reports that the refilling system cuts costs by approximately ten percent.²³⁶ As of March 2003, Ricoh filed more than 150 patent applications in Japan for its unique refilling method.²³⁷

Creating a new, unprecedented recycling system and obtaining a patent for the system can be technically challenging. Furthermore, it can require a significant amount of research and development expense as well as legal fees. In fact, filing for a patent in the U.S. costs approximately \$8,580, and applying for a patent in Japan can cost as much as \$29,665.²³⁸

230. *Id.* at *1, *8; *NCR Corp. v. Lemelson Med., Educ. and Research Found.*, No. 01-7931, 2002 WL 662872, at *8 (2d Cir. Apr. 23, 2002).

231. Ricoh, Environmental Technologies and Products Development (Resource Conservation and Recycling), <http://www.ricoh.com/environment/action/3.html> (last visited Feb. 24, 2007).

232. *Id.*

233. *Id.*

234. *Id.*

235. *Id.* Ricoh states that it calculated the environmental impact of the ink cartridge based on the amount of carbon dioxide emitted. *Id.*

236. *Id.*

237. *Id.*

238. Kagan Binder, Estimated Patent Costs: National and International (2004) at 3, 5, <http://www.kaganbinder.com/docs/7-EstimatedPatentCosts.pdf> (last visited Feb. 24, 2007).

However, once recycling companies invent new recycling methods and obtain patents for their inventions, they can use their unique methods to pursue recycling activities with a significantly lower risk of infringing other manufacturers' patents. Moreover, developing unique recycling systems such as Ricoh's soft toner cartridge refilling system can promote innovation in the recycling industry and may lead to more efficient and effective recycling techniques. Thus, from a long-term perspective, filing for patents on creative recycling methods may be an ideal option for recycling companies to carry on their recycling activities while preventing liability for patent infringement.

IV. CONCLUSION

The *Canon v. Recycle Assist Co.* case before Japan's Intellectual Property High Court presented a seemingly irreconcilable conflict between recycling activities and patent rights protection. Recycling is a valuable activity that contributes substantially to the conservation of environmental resources. At the same time, however, recycling activities could violate the patent rights of the recycled product's original manufacturers who have made significant investments in research and development.

In cases involving such conflict, courts in the U.S. and Japan have not tolerated acts of patent infringement for their resulting recycling effects and positive impact on the environment. Instead, in both countries, the courts' legal analyses have focused on applying existing patent law. Therefore, persistent efforts to explore ways for avoiding patent infringement are essential to continue contributing to environmental conservation through recycling activities in the U.S. and Japan.