

# Hybrid Use of Trade Secret and Patent Protection in Green Technology

*Susan Perng Pan, Sughrue Mion, PLLC*

The interplay between trade secret and patent protection has become more significant during the current domestic and international economic downturn. As companies around the world have tightened their belts, those engaged in green technology face even tougher challenges. Nascent green technology companies do not have established corporate coffers or easy access to credit. Rather, they are likely to rely heavily on venture capital or be very thinly capitalized.<sup>1</sup> With additional financial hurdles and burdens, it may be more tempting for these companies to over-rely on relatively less expensive forms of intellectual property to protect developing technologies. This is imprudent.

## *Comparison of Trade Secret and Patent Rights*

In the United States, two types of intellectual property rights provide sufficiently robust protection for green inventions. Such inventions may include the mechanical and electrical components of wind turbines, the circuits and materials to induce charges in solar converters or the chemical reactions in fuel cell and biofuel technologies, and other advances in renewable energy. One form of intellectual property is trade secret protection, which is generally the less expensive option, at least at the outset. The other is utility patent protection. In doing the cost-benefit analysis for using one of these forms over the other, green technology companies need to realize that both have an appropriate role in protecting valuable innovations.

A trade secret is any information of economic or competitive value, which is not well-known and is kept confidential.<sup>2</sup> Thus, once an invention is made, a company can keep its right proprietary by not disclosing the invention to others and by taking sufficient steps to maintain its secrecy. The secrecy is usually accomplished by a systematic implementation of non-disclosure agreements among the company's employees and business partners. As is apparent, there are few upfront out-of-pocket costs in establishing trade secret rights. Rather, the costs will accrue in terms of administrative time and legal fees in keeping the secret a secret. If another company is able to develop the technology on its own, either through independent research or reverse engineering, then the trade secret becomes rapidly devalued. That other company will also be able to use the invention and compete against the company which developed the invention first. Trade secret protection confers no rights of exclusion.

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By contrast, a patent allows a company to exclude others from using, making or selling the invention for a period of twenty years after the legal filing date of the patent application.<sup>3</sup> In essence, it grants the company a limited monopoly. However, the patenting process will require the company to write a detailed patent application, pay government filing and search fees, be prepared to wait through a long process and have its initial application rejected. An examiner will not grant the patent until he decides that the invention is defined in a sufficiently narrow way that it is deemed novel and non-obvious over anything that has preceded. The process may take many exchanges between the applicant and the Examiner to define the invention in a patentable way. In addition, because the patent laws regarding novelty and non-obviousness are complex, assistance from a patent law expert is generally required, thus incurring additional expense. In the United States, a patent application will automatically publish eighteen months after its initial filing.

#### *Hybrid Nature of Patent and Trade Secret Rights During Patent Prosecution*

At first blush, the automatic publication of the patent may seem completely inconsistent with being able to maintain any trade secret protection which requires well-guarded secrecy. However, trade secret protection and patent protection are not mutually exclusive routes to pursue.

A patent application first filed in the U.S. is maintained in secrecy for the first eighteen months of its pendency<sup>4</sup>. During this time, as long as the confidentiality provisions are maintained, trade secret protection can also still be maintained for the invention. If, during this early stage of the application process, the patent applicant becomes satisfied that trade secret protection is sufficient to protect the invention, then the patent application can be withdrawn from publication via a timely filed request for abandonment.<sup>5</sup> The trade secret protection will thus continue. For example, during the early stages the applicant may determine that trade secret rights are adequate protection for inventions that have proven to be very difficult to reverse engineer, or too difficult to independently develop. Using this as a measure, it is unlikely that mechanical and electrical-based green inventions would be good candidates to hold as trade secrets.

As an alternative to abandoning the patent application to maintain the secrecy, an applicant may file a request for non-publication concurrently with the originally filed application.<sup>6</sup> In this situation, the patent will be held in secrecy until it is actually issued as a patent. By the time a patent is deemed allowable by the patent Examiner, the application will have undergone the rigors of the examination. This allows two advantages. First, this will permit the applicant additional time to consider whether the trade secret rights are sufficient. Second, the legal scope of the patent rights can be better evaluated. If the issued patent will be very broad in its scope, then it may be prudent to forego the trade secret protection at that time and take advantage of the exclusionary rights of the patent. If for some reason the applicant is not satisfied with the breadth or strength of the patent, then the application can be abandoned prior to issuance (publication), and the trade secret can be maintained. Or, if the applicant is not quite satisfied with the patent rights granted on the initial application, the applicant can take another bite at the apple and file a new application based on the first application, and maintain the second application in secrecy as it tries for a more satisfactory scope of exclusion via patent rights. During

the pendency of the second patent application, any disclosures which were not previously made public via the first patent will still enjoy trade secret protection.

It should be noted that an application with a non-publication request cannot be pursued in another country which has an eighteen month publication requirement.<sup>7</sup> Since most developed economies have such a requirement in their patent laws, the non-publication route will be severely curtailed if patent rights are sought internationally. An applicant is free to change his mind during pendency to withdraw the non-publication request and pursue foreign patent rights. In this case, the applicant of a non-published application must notify the U.S. Patent Office of such action or else he will jeopardize the status of his U.S. application.

It is also important to note that there are no legal rights to enforce during the patent's pendency. Nevertheless, during the pendency of the application(s), the invention may be marked "patent pending" as a warning to others that they should think twice about trying to copy the invention as a patent may be granted.<sup>8</sup> This serves as a deterrent against copying of inventions undergoing examination and thus offers some benefit under a "hybrid" intellectual property scheme. However, once the patent application is abandoned in favor of the trade secret rights—or for any other reason—the company is no longer entitled to place the marking "patent pending" on its products. If such a marking continues to be used after a patent application is withdrawn, the company may be accused of "falsely marking" its invention. This makes the company susceptible to legal liability and damages.<sup>9</sup> Therefore, if a company initially takes a hybrid approach to protect its invention, it must carefully monitor projected publication dates and be ready to withdraw or abandon its patent applications accordingly to maintain the trade secret component of its intellectual property. If the company does withdraw the patent application, it should also remember to cease any "marking" practices.

The secrecy during the pendency time of a patent application is one way to maintain a "hybrid" form of intellectual property rights. Ultimately, once a patent application is ready to mature into an issued patent or is close to its eighteen-month publication, a decision must be made whether the trade secret route will continue to be maintained or whether the published patent will provide the more beneficial form of protection for the invention.

As a corollary, the U.S. Patent Office announced a special "green technology" program in December 2009. With a goal of promoting advances in green inventions, the Patent Office will expedite examination of applications for inventions that materially contribute to greenhouse gas reduction, sustainable energy, or energy conservation. In order to use this expedited procedure, the applicant must be willing to allow the application to go to publication earlier than the standard eighteen month date.<sup>10</sup> This will make it difficult to maintain trade secret protection in a practical way since the publication date cannot be reasonably ascertained in advance.

#### *Applying a Hybrid Approach to Protecting Green Inventions*

Another form of hybrid protection involves categorizing the invention into two different segments. One of the segments can be protected by patent, and the other of the segments can be protected by maintaining it as a trade secret. Either segment

can use the "dual" nature of protection during the duration of secrecy of the patent application. One high-profile green company is using such hybrid patent/trade secret protection as its intellectual property strategy. Biofuel company Coskata produces ethanol products from feedstock and other carbon-based starting materials.<sup>11</sup> The feedstock is subjected to well-known gasification techniques to make synthetic gases. These synthetic gases are biofermented to convert them into a liquid from which ethanol is distilled. The critical component of this process is the bio conversion of the synthetic gas to a liquid. This is done in a bioreactor wherein micro-organisms efficiently consume the carbon monoxide and hydrogen in the synthetic gas stream. The biofermentation occurs at low temperature and pressure, thereby reducing production costs.<sup>12</sup>

Coskata has several pending patent applications on the bioreactor segment of the process.<sup>13</sup> The identity of the micro-organism fed into the bioreactor is protected by trade secret.<sup>14</sup> The micro-organism is reported to be naturally occurring. Due to trade secret protection, its identification is not precisely known, though many have speculated as to what it may be. If anyone is able to independently identify what that micro-organism is, then this may allow entry into this market space by other biofuel competitors. However, if Coskata is able to obtain sufficiently broad protection for the physical bioreactor and/or its components, then Coskata will still be able to control the market for biofuels made by the process as a whole. This is due to the critical aspect of biofermentation in the process.

Coskata's hybrid approach to intellectual property protection is sound. The bioreactor can be deconstructed and analyzed and then reconstructed. As such, the exclusionary right afforded by a patent would be more valuable since it is unlikely that the overall construction of the reactor can be maintained in secrecy. In contrast, the identification of one of several million possible microbes that may be used for effective and efficient biofermentation is a more difficult endeavor. Reverse engineering or independent identification of the microbe is far more difficult than reverse engineering of the physical reactor. In addition, because the currently used micro-organism is naturally occurring, this would pose significant difficulties in obtaining patents on the micro-organisms themselves. Under U.S. patent law, the material in its natural form is not patentable.<sup>15</sup>

Nevertheless, this does not rule out the possibility of a patent on the biological component. For instance, some have voiced skepticism over how well Coskata's currently used micro-organisms will work in a scaled up commercial environment.<sup>16</sup> Hypothetically, if the naturally occurring organisms will not work on a commercial scale, then Coskata researchers may modify the naturally occurring micro-organism to create a manmade one that will work in sustainable populations on a commercial level. Such a manmade organism would qualify for patent protection, provided the other requirements for novelty and non-obviousness were also met. Thus, as research continues, Coskata may even make further refinements in how it protects different aspects of its technology using both patents and trade secret protection.

As a final point, Coskata has stated that part of its business plan includes licensing the technology as well as running its own ethanol generating facilities.<sup>17</sup> The patent component makes such licensing objectives more feasible due to the patents' exclusivity provisions. A licensing plan based solely on the trade secret component

(the microorganism) would be more difficult to implement and administer. This is because it would require constant administration of the secrecy agreements for its business partners and all their partners' employees. With the transient nature of workforces, it would be much more of a challenge to maintain the confidentiality requirements in any broad-reaching licensing plan.

### Conclusion

As the example of Coskata demonstrates, the hybrid uses of trade secrets and patents can be highly effective in green technology. The appropriate mix is especially important when aspects of green technology can be partitioned into different segments, some of which are easy to re-design or replicate and some of which are not. Decisions of when to use trade secret, when to give up trade secret, and when to use patents or abandon patents need to be scheduled carefully in view of U.S. Patent Office timelines, and must be monitored over the lifetime of the product. Decisions clearly should not be based on selecting the lowest cost option. Mismatching the requirements of the technology and the scope of the intellectual property rights could result in a valuable technology winding up in the public domain before its development costs can be recouped.

*Susan Perng Pan is partner in the Washington, D.C. office of the global intellectual property firm, Sughrue Mion PLLC. She counsels clients in complex multi-party patent disputes before U.S. federal district courts, the U.S. International Trade Commission, and the U.S. Federal Trade Commission. Her practice also includes preparing and prosecuting patent applications as well as appeals and interferences before the U.S. Patent and Trademark Office. She may be contacted at span@sughrue.com. The views expressed herein are solely those of the author.*

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<sup>1</sup> See Matthew Wald, *Industry Built From Scratch*, N.Y. Times (Oct. 14, 2009), available at <http://www.nytimes.com/2009/10/15/business/energy-environment/15biofuel.html>; Matt Fair, *Robinsville Solar Company in Bankruptcy*, NJ.Com (2010), [http://www.nj.com/mercer/index.ssf/2010/030/robinsville\\_solar\\_company\\_in\\_bankruptcy.htm](http://www.nj.com/mercer/index.ssf/2010/030/robinsville_solar_company_in_bankruptcy.htm) (last visited March 26, 2010); Lisa Sibley, *Fire Sale: Imara's battery patents and trade secrets*, Cleantech.com (2009), <http://cleantech.com/news/5394/fire-sale-imara-battery-patents> (last visited March 26, 2010).

<sup>2</sup> See *Kewanee Oil Co. v. Bicron Corp.*, 416 U.S. 470, 474-75 (1974).

<sup>3</sup> 35 U.S.C. § 154(a)(2).

<sup>4</sup> 35 U.S.C. § 122(a)-(b).

<sup>5</sup> 37 C.F.R. § 1.138(c).

<sup>6</sup> 35 U.S.C. § 122(b)(2)(B)(i).

<sup>7</sup> *Id.*

<sup>8</sup> See Manual of Patent Examination Procedure § 1706 (8th ed. 2007).

<sup>9</sup> 35 U.S.C. § 292.

<sup>10</sup> U.S. Patent and Trademark Office, *Pilot Program for Green Technologies Including Greenhouse Gas Reduction*, 74 Fed. Reg. 64,666 (Dec. 8, 2009).

<sup>11</sup> Coskata, *Our Process*, <http://www.coskata.com/process/> (last visited March 23, 2010).

<sup>12</sup> *Id.*

<sup>13</sup> See U.S. Patent Publication Nos. 2008/0305539 (filed July 23, 2007), 2008/0305540 (filed January 20, 2008), and 2009/0029434 (filed April 29, 2008) among others.

<sup>14</sup> Coskata, *supra* note 11.

<sup>15</sup> See *Diamond v. Chakrabarty*, 447 U.S. 303, 309 (1980).

<sup>16</sup> Wade Roush, *Coskata Refutes Energy Analysts Critique, Say It's on Track to Make Ethanol for Under \$1 per Gallon*, Xconomy (Aug. 21, 2008), available at <http://www.xconomy.com/boston/>.

<sup>17</sup> See Coskata, *Facilities*, <http://www.coskata.com/facilities/> (last visited March 23, 2010).