

INTELLECTUAL PROPERTY DILIGENCE FOR ALTERNATIVE ENERGY MARKETS: THE RACE TO COMMERCIALISE EXCLUSIVE POSITIONS

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CLEANTECH IS BIG BUSINESS

According to New Energy Finance, the clean energy sector grew to over \$148 billion in 2007, up forty-one percent from 2006 despite the last summer's credit crunch.¹ Cleantech is commonly understood as an array of distinct technologies, services, and products aimed at reducing greenhouse gas emissions and other pollutants while promoting energy efficiency and the conservation of natural resources. These technologies include wind, solar, and geothermal energy generation, biofuels, energy storage, nuclear, and new pollution-pollution abatement, recycling, clean coal, and water technologies. Cleantech deals account for an ever-increasing share of venture capital investment, and corporate investment has

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1. New Energy Finance Limited (2008).

gained momentum as established companies seek to diversify. In 2007, Cleantech companies began making strategic alliances with Fortune 100 companies; for example, Chevron Texaco Technology Ventures invested in BrightSource Energy Inc., a developer of utility-scale solar plants, Konarka Technologies, Inc., a developer of photovoltaic materials, and Southwest Windpower, a producer of small wind turbines.² Additionally, non-financial drivers such as regulation, political will, and fears over energy supplies remain strong, creating a more competitive commercial environment and presenting unique challenges in some areas such as wind energy, solar energy, and biofuels.

Wind energy refers generally to the utilization of wind for generating power with turbine technology. Effective wind power generation is related to the performance of wind turbines, which are capable of adjusting the blade angles and orientation such that the angle of attack with respect to the wind direction is changed to increase energy capture. Following the recent push for wind power to be a mainstream player in the world's energy markets, there is an increasing need to improve reliability and turbine performance, and to develop technologies for effective large-scale wind plants. It is certain that increased development efforts and innovation will be required to expand the wind energy industry.³

Similar to wind energy, recent solar energy development is moving solar technologies on a path toward full competitiveness with conventional power generation. One example of solar technologies is photovoltaic cells, which convert sunlight directly into electricity and are made of semiconductors such as crystalline silicon or various other thin-film materials. Another example is concentrating solar power technologies, which use reflective materials to concentrate the sun's heat energy, ultimately driving a generator to produce electricity. These technologies include dish/engine systems, parabolic troughs, and central power towers. To overcome the cost-effective challenges of solar energy, there is an intense interest in developing new materials, photovoltaic cell designs, and large-scale solar energy systems.

The term biofuels refers to a wide range of fuels derived from biomass or recently living organisms. Efforts in this sector are increasingly focused on expanding technologies beyond controversial first-generation feedstock commodities like corn, soybeans, and other food staples. Much attention is turning to cellulosic biofuels, such as ethanol made from non-food products like non-seed crop waste, wood, corncobs, switchgrass, leaves, stalks, and algae, many of which may be genetically modified, but commercial activity around its production is nascent. Significant challenges lie in the process of converting organic matter to fuel, and techniques for fermenting lignocellulosic biomass are also being refined at

2. PricewaterhouseCoopers and the National Venture Capital Association, *MoneyTree™ Report* (2008).

3. *Wind Energy Multiyear Program Plan For 2007-2012*, U.S. Dept. of Energy (2007).

every stage in the treatment cycle, including new approaches to pretreatment and the incorporation of novel enzymatic reactions.⁴

Since the alternative energy industry is still primarily focused on research and development, a strong intellectual property portfolio is crucial to securing an effective market position. As a further indicator of innovation in the sector, the number of U.S. patents granted for clean technology breakthroughs has increased about twenty percent over the past five years, from fewer than 750 in 2002 to around nine-hundred in 2007.⁵

INTELLECTUAL PROPERTY RIGHTS – PROTECTING INNOVATION

While the number of U.S. patent applications has steadily increased in recent years, the trend in the number of U.S. patents granted actually fell slightly from 2006-2007.⁶ This decrease in the number of patents granted may be a result of the U.S. Supreme Court's ruling in *KSR International, Co. v. Teleflex, Inc.*—arguably the most important patent ruling in years—which effectively raised the bar for inventors who wish to obtain patent protection for products that rely on new combinations of existing, publicly-known elements. Because alternative energy developments often incorporate older technologies, meaningful advances may be susceptible to being seen by the U.S. Patent and Trademark Office and the courts as merely “ordinary innovation” that “does no more than yield predictable results.”⁷ While these concerns have seemingly not chilled investment, nor the potential for alternative energy to focus on intellectual property transaction work as big oil, gas, and chemical companies seek to license or acquire new technologies, they do underscore the need for companies to manage intellectual property as a strategic global enterprise.

A patent does not confer on its holder a right to practice an invention; rather, a patent holder has the right to exclude others from making, using, or selling the patented cleantech invention in the country of issuance and from importing the patented cleantech invention or a cleantech product made from the patented process into the country of issuance. Not all patents are created equal. Some are almost worthlessly narrow and easy to “design around,” while others (especially older ones) are drawn very broadly and provide a significant barrier to entry by a competitor. Potential licensors and investors of alternative energy technologies must understand that whether a particular patent sits at either extreme of the spectrum, or somewhere in between, cannot usually be discerned by simply examining just the patent document itself. Rather, the true value of a patent is uncovered by digging through its history, studying other patents, looking at the competitive landscape and consid-

4. “Development of Cellulosic Biofuels,” Chris Somerville, U.S. Dept. of Agriculture (2007).

5. Clean Energy Patent Growth Index, <http://www.cleanenergypatentgrowthindex.com> (2008).

6. *Id.*

7. *KSR International, Co. v. Teleflex, Inc.*, 127 S. Ct. 1727 (2007).

ering potential alternatives to the patented invention. As a result, patents require the most intensive due diligence scrutiny of all intellectual property.

Due diligence is critical to avoid costly mistakes and to determine the value of cleantech business transactions involving intellectual property. The specialised nature of cleantech intellectual property due diligence requires that properly-focused attorneys be retained to perform the necessary investigations. Comprehensive intellectual property due diligence should identify weaknesses, potential liabilities, and potential opportunities. The objectives are (1) to determine the scope of a target's intellectual property rights, both owned and licensed, in relation to a target's business; (2) to determine whether a target is bound by onerous terms in licenses and other intellectual property-related agreements; (3) to determine whether a target's intellectual property rights are transferable to an acquirer – for example, prohibitions on assignment and provisions of change of control; and (4) to determine whether a target is involved or may become involved in any infringement disputes, either offensively or defensively.

Technologically sophisticated legal counsel can provide expert analysis and opinions both of the validity and enforceability of existing patents, their strength and breadth, and the degree to which a commercial entity may not be found to infringe upon a patent holder's rights. These elements are fundamental to strategic planning and the identification of offensive or defensive methods of positioning a company better for the future or to enhance or broaden the market exclusivity.

TO PATENT OR NOT TO PATENT . . . THERE ARE MANY QUESTIONS

A thorough and timely understanding of a competitor's position can thus direct the design of new products. Before commercialising a cleantech venture, a company should examine the patentability of an invention and conduct a so-called "freedom to operate" analysis in order to determine if any existing patents block the company's ability to achieve its objectives. This helps a company better to decide whether or not to incur the costs of seeking patent protection or to alter a product to avoid risking infringement.

As the alternative energy markets continue to develop and mature, and companies secure positions of market exclusivity, it is inevitable that patent holders will begin to assert their intellectual property rights through enforcement of their claimed inventions, processes, and business methods. A finding of infringement by a commercial product can lead to an injunction (halting all sales) or damages such as reasonable royalties or lost profits; even treble damages can be levied against those found to be willfully infringing.

Another consideration is where to file for protection. Such decisions are usually made on the basis of which countries would produce products or have markets for products embodying the claimed inventions. In cle-

antech, more than in other industries, such a list might include more developing countries. The protection afforded by a patent in the U.S. runs for twenty years from the date on which the application was initially filed, so reducing the time between filing an application and obtaining an issued patent extends the useful working life of the enforceable intellectual property rights. In the United States, energy-related matters qualify for a unique provision called a Petition to Make Special that expedites prosecution of the patent application by allowing it to jump the queue on the examiner's docket.

These types of diligence issues become especially important to consider in cleantech areas that have developed around relatively older core technologies. For example, wind and concentrating solar power technologies utilize turbines as the power generating mechanism, yet U.S. patent number 5,448,889, which is entitled to a priority date of 19 September 1988, has claims drawn very broadly to a method of producing power by supplying compressed air from solar heat to a turbine.⁸

Another example of many of these issues is encapsulated by Monsanto's ownership of European patent number EP0301749—claiming species-wide coverage on all genetically-modified soybean varieties—which the company asserted along with other patents in their portfolio to corner ninety percent of the world's genetically modified soybean market over thirteen years before the patent was revoked in 2007 for not sufficiently enabling the claimed invention.⁹

While patents claiming innovative business methods for trading emissions credits or paying to offset carbon footprints could present a particularly lucrative opportunity to companies seeking financial enrichment from the exploitation of carbon trading regulations, the legislative and legal landscapes for business method patents remain unclear. The U.S. Court of Appeals for the Federal Circuit is currently hearing a case that is widely anticipated to affect the future of business method patents, and companies may wish to retain such approaches as trade secrets.¹⁰

Trade secret is a less often explored, but still effective scheme for protecting intellectual property. A trade secret is essentially anything that is not generally known and that gives the owner of a trade secret a competitive business advantage. A trade secret may be a patentable invention or may be other intangibles such as manufacturing techniques, business methods, sources of supply, customer lists, and other industrial or commercial ideas. In order to qualify as a trade secret, the owner must take precautions to ensure that it remains secret. The owner of a trade secret has the right to prevent the use or the disclosure of the trade secret by anyone who learned or derived it from the owner, but has no rights against anyone who independently discovers it.

8. See U.S. 5,448,889.

9. See EP0301749.

10. *In re Bilski* (Fed. Cir. 2008 – *en banc*).

The race is on to secure positions of exclusivity in the burgeoning alternative energy marketplace. Innovators must be diligent in their efforts to obtain protection for their inventions and in their enforcement of intellectual property rights. Practitioners must be conscientious in evaluating their prospective commercialisation in order to avoid costly litigation stemming from infringement. Investors must think critically about the intellectual property challenges to portfolio value. One way to gain a competitive advantage is to engage a global general-practice law firm with the vision, leadership, technical and market insight, and seasoned expertise to find answers and solutions to these and other challenging issues.