Clean Coal Technologies Inc.
Form 10-K
March 26, 2013

UNITED STATES

SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM 10-K

(Mark One)

x ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934
For the year ended: December 31, 2012

o TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934
For the transition period from _____ to _____

Commission file number: 000-53557

CLEAN COAL TECHNOLOGIES, INC.
(Exact name of small business issuer as specified in its charter)

NEVADA	26-1079442
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification No.)
295 Madison Avenue (12th Floor), New York, NY	10017
(Address of principal executive offices)	(Zip Code)

(646) 710-3549
(Issuer's telephone number)

Securities registered pursuant to Section 12(b) of the Exchange Act:

Title of each class	Name of each exchange on which registered
None	N/A

Securities registered pursuant to Section 12(g) of the Exchange Act:

Title of class
Common Stock

Indicate by check mark if the Registrant is a well known seasoned issuer, as defined in Rule 405 of the Securities Act.
YES o NO x

Indicate by check mark if the Registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Exchange Act. YES o NO x

Indicate by check mark whether the Registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Exchange Act during the preceding 12 months (or for such shorter period that the Registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. YES x NO o

Indicate by check mark whether the registrant has submitted electronically and posted on its corporate Website, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files). YES x NO o

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K is not contained herein, and will not be contained, to the best of the Registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K. x

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or a smaller reporting company. See the definitions of “large accelerated filer,” “accelerated filer” and “smaller reporting company” in Rule 12b-2 of the Exchange Act.

Large accelerated filer o	Accelerated filer o	Non-accelerated filer o	Smaller reporting company x

Indicate by check mark whether the Registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). YES o NO x

On March 22, 2013, there were 861,717,644 shares of common stock of the Registrant outstanding, and the market value of common stock held by non-affiliates was $37,664,059 based upon the closing price of $0.06 per share of common stock as quoted by the OTC Markets Group.

Documents Incorporated by Reference

None.

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PART I

ITEM 1. BUSINESS

Forward-Looking and Cautionary Statements

Except for statements of historical fact, certain information in this document contains “forward-looking statements” that involve substantial risks and uncertainties. You can identify these statements by forward-looking words such as “anticipate,” “believe,” “could,” “estimate,” “expect,” “intend,” “may,” “should,” “would,” or similar words. The statements these or similar words should be read carefully because these statements discuss our future expectations, contain projections of our future results of operations, or of our financial position, or state other “forward-looking” information. Clean Coal believes that it is important to communicate our future expectations to our investors. However, there may be events in the future that we are not able to accurately predict or control. Further, we urge you to be cautious of the forward-looking statements that are contained in this Annual Report because they involve risks, uncertainties and other factors affecting our technology, planned operations, market growth, products and licenses. These factors may cause our actual results and achievements, whether expressed or implied, to differ materially from the expectations we describe in our forward-looking statements. The occurrence of any of these events could have a material adverse effect on our business, results of operations and financial position.

Overview

Clean Coal Technologies, Inc. (“We,” “Company” or “Clean Coal”) owns a patented technology that we believe will provide cleaner energy at low cost through the use of the world’s most abundant fossil fuel, coal. Our technology is designed to utilize controlled heat to extract and capture pollutants and moisture from low-rank coal, transforming it into a cleaner-burning, more energy-efficient fuel prior to combustion. Our proprietary coal cleaning process is designed to ensure that the carbon in coal maintains its structural integrity during the heating process while the volatile matter (polluting material) within the coal turns into a gaseous state and is removed from the coal. We have trade-marked the name “PRISTINE™” as a means of differentiating our processed product from the negative connotations generally associated with coal, and its traditional use. PRISTINE™ is applicable for a variety of applications, including coal-fired power stations, chemical byproduct extraction, and as a source fuel for coal-to-gas and coal-to-liquid technologies.

In September 2011, we filed a provisional application for a patent on a new technology known as Pristine M. The new technology is a moisture substitution technology that, owing to the superior quality of the product and attractive economics, is expected to be highly successful in the moisture removal business globally.

Current or Pending Projects. We have dedicated maximum effort to develop a global commercial platform around a series of strategic partnerships. We have signed a 25-year Technology License Agreement (“TLA”) with Jindal Steel and Power, Ltd. (“Jindal”). Under the TLA, the Company will receive an on-going royalty fee of one dollar ($1.00) per metric ton on all coal processed from Jindal majority-owned mines in the ASEAN region, up to four million tons or four million dollars ($4,000,000) per annum with a waiver of additional royalty fees on further processed coal up to a total of eight million tons per year. If coal processing increases above eight million tons per year, the royalty will be reinstated and the parties have agreed to review the rate.

Jindal will also pay the Company a one-time license fee of seven-hundred and fifty thousand dollars ($750,000). The first installment of the license fee, three-hundred and seventy-five thousand dollars ($375,000), has been paid pursuant to the signing of the pilot plant construction contract. The balance of three-hundred and seventy-five thousand dollars ($375,000) will be due upon the successful testing of the pilot plant which is expected to be completed during the second quarter of fiscal 2013.

For our ASEAN region joint venture initiative, we entered into a joint venture with the Archean Group (“AGPL”) to develop deploy and market our Pristine M technology throughout the ASEAN region (including Indonesia, the Philippines, Cambodia, Vietnam, Malaysia, Brunei, Thailand, Laos and Myanmar). The joint venture company (“Good Coal” or the “JV”) was set up to be owned 55% AGPL and 45% Clean Coal. For its 55% holding, AGPL committed to contribute US $4,000,000 to the JV. Of this, US $2,000,000 was to be used to fund the construction of a 1:10-scale pilot plant in Oklahoma. The remaining US $2,000,000 represents a one-time license fee to be paid to Clean Coal upon successful commissioning of the pilot plant. AGPL also agreed to pay a US $1.00 (one dollar) per ton ongoing royalty fee for all coal processed from AGPL majority-owned mines, with a waiver for the first two million tons of coal produced. For our 45% interest in the joint venture, we were to contribute a 25-year exclusive license to develop, market and deploy Pristine M Technology, covering the ASEAN countries including Indonesia, the Philippines, Cambodia, Vietnam, Malaysia, Brunei, Thailand, Laos and Myanmar. We also committed to cover pilot plant construction costs, if any, above US $2,000,000. Engineering and design work for the construction of the pilot plant in Oklahoma commenced immediately upon execution of an EPC contract and a down payment to SAIC Energy Environment & Infrastructure (“SAIC”) by the JV.

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On December 18, 2012, we sent a notice of termination, effective immediately, to AGPL pursuant to the termination provisions of the Joint Venture Agreement in Respect of Good Coal, Pte. Ltd (the "Good Coal"), effective June 5, 2012, between the Company and AGPL (the "JV Agreement") and the Technology License Agreement, effective May 31, 2012, between the Company and Good Coal (the "TLA"), each previously disclosed by the Company, as well as certain related agreements, based on AGPL's continuing failure to cure non-payment to SAIC as per amended payment terms agreed with CCTI and approved by SAIC,. The Good Coal Pte, Ltd JV Agreement and the TLA were designed to develop, deploy and market the Company's Pristine M technology throughout the ASEAN region. As per terms of a Payment Agreement with CCTI, the Company will also seek the dissolution of Good Coal.

On February 5, 2013, we signed a construction and testing contract ("EPC Agreement") with SAIC Constructors, LLC ("SAIC"). We also remitted the first payment of $2 million to SAIC for the construction of the 2-ton/hour, pilot plant in Oklahoma, as per the terms of the new contract. Total cost of the project, including testing to take place at a designated site in Oklahoma, is estimated at $3.6 million. Commissioning of the pilot plant is expected during the second quarter of 2013. As sole counterparty to the EPC contract, we will own the completed pilot plant outright. We have entered into the ECP Agreement to ensure that there is little or no disruption in the pilot plant construction schedule.

Other projects

Pending resolution of legalities surrounding the change in ownership of the interests of the Chinese partner in the Inner Mongolia joint venture company, we are seeking to transition the Company's involvement from full joint venture partner to merely a licensor. Although the proposed project has all permits fully approved, there has been no recent activity to move the project forward.

In our continued effort to expand global awareness for our technology and to build a potential pipeline of business for when the 1:15 scale plant is successfully commissioned CCTI has signed an NDA with a company in Australia that has significant coal assets in Southern Australia. We have also signed NDA's with two major Russian coal companies, one with a company in Serbia and another with a major Indian conglomerate. In each case we are in the early stages of exchanging information and determining how best our technology might be deployed.

Technology

Our original Pristine coal treating process extracts the volatile matter (solidified gases or pollutant material) from a wide variety of coal types by heating the mineral as it transitions through several disparate heat chambers, causing the volatile matter to turn to gas and escape the coal, leaving behind a cleaner-burning fuel source. Historically, the primary technological challenge of extracting this volatile matter has been maintaining the structural and chemical integrity of the carbon, while achieving enough heat to turn the volatile matter into a gaseous state. Heating coal to temperatures well in excess of 700° Fahrenheit is necessary to quickly turn volatile matter gaseous. However, heating coal to these temperatures has generally caused the carbon in the coal to disintegrate into an unusable fine powder (coal dusting). Our patented flow process transitions the coal through several atmospherically independent heat chambers controlled at increasingly higher temperatures. These heat chambers are infused with inert gases, primarily carbon dioxide (CO2), preventing the carbon from combusting. We have identified the optimum combination of atmospheres, levels of inert gases, transport speed, and temperatures necessary to quickly extract and capture volatile matter, while maintaining the structural and chemical integrity of the coal. Using our technology, we are able to capture the volatile gases that escape the coal, and to utilize some of these gases to fuel the process, while others are captured in the form of usable byproducts, to potentially provide an ancillary revenue stream. Depending on the characteristics of the coal being cleaned, the flow processing time is expected to be in the range of 12 to 18 minutes.

Our process derivatives are broadly characterized by the following three elements which vary according to the characteristics of the feed coal:

A first stream is predominantly water that is extracted from the coal. Although expected to be 100% pure (water removed from coal is condensed from its vapor state), it may contain some contaminants.

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A second stream, produced in the de-volatizing stage of the process, is the condensed light hydrocarbons gases that we call “coal-derived liquids, or CDLs. These could prove to be the most valuable component of the process. It is anticipated that the CDLs will resemble a crude oil (probably sweet crude if the sulfur content of the feed coal is low) resulting in a readily-marketable product. In the Pristine-M process, de-volatization is controlled and optimized to meet the needs of drying and stabilizing the coal, minimizing the production of gas or liquid byproducts.

The third stream is the heavy tar-like liquid potentially marketable to the asphalt and coal tar industry. This stream is entirely absent in the Pristine-M process which is focused only on the task of drying and stabilizing.

The Pristine technology has three distinct primary applications: the cleaning of coal for direct use as fuel for power stations and other industrial and commercial applications; the extraction of potentially valuable chemical by-products for commercial sale; and the use of processed coal as a feed stock for gasification and liquefaction (CTG & CTL) projects.

Pristine-M de-watering Process. During the fourth quarter of 2011, the Company filed a provisional patent application for a new technology focused on the de-watering of coal. The new process, Pristine-M, is unique in that it retains elements of the original process but has discovered a technology that stabilizes the dried coal, rendering it impermeable and easy to transport with low risk of spontaneous combustion. The latter results have proved elusive for the majority of companies that have entered the market with coal de-watering technologies.

The Pristine-M process, sharing some of the scientific principles and engineering components that underpin the Pristine process, is a modular design that includes a section where the coal is partially de-volatized and then coupled to as many drying and stabilization modules as may be required to achieve a client’s desired level of production. Each of the modules is designed to handle 30-tons/hr and, similar to the Pristine process, relies on components that are available off-the-shelf and have already stood the test of time as to their reliability and durability.

Our technology has been tested and proven under laboratory and pilot scale conditions in Pittsburg, PA, and the results studied by SEE&I, SAIC and as well as certain potential strategic partners as part of their due diligence on CCTI and the CCTI technology. To date, testing of about 40 coal types from all over the world has been completed. We have also benchmarked our technology against the Carnegie Mellon simulation model with excellent results. Testing has shown no evidence of coal dusting, self-combustion, moisture re-absorption, or other technical concerns that might hinder commercialization. The building of the 1:10 scale plant in Oklahoma will be followed by construction of the first commercial plant of 1,000,000 tons a year to be built in Indonesia during 2013.

While we believe that both of our Pristine technologies offer vast potential for commercialization, our market entry strategy right now is focused on the Pristine -M technology that we believe offers an immediate opportunity to monetize our intellectual property. The specific opportunity is in Asia that, at the moment, is focused almost entirely on the need to produce a dry and stable coal to meet the growing need of coal-fired power plants. Indonesia is currently one of the largest suppliers of thermal coal to India and China, but Indonesian coal suffers from its high moisture content and low calorific content. Both are problems that we believe will be effectively addressed by the Pristine-M technology.

As part of the process to commercialize our technology, on August 21, 2008, we entered into an Umbrella Agreement with our engineering consultant, SAIC Energy, Environment & Infrastructure, LLC, “SEE&I”, (formerly Benham), a division of Science Applications International Corporation (“SAIC”). The contract, last revised on February 14, 2012, designates SEE&I as exclusive or lead EPC contractor for CCTI projects and sets out terms for the engineering design, procurement and construction of CCTI plants anywhere in the world.

SEE&I has produced designs for both the Pristine and the Pristine-M processes. The Pristine design provides for the deployment of standard operational modules, each with annual capacity of 166,000 metric tons, providing the flexibility to be configured in accordance with customers' individual production capacity requirements. SEE&I's is confident that our coal cleaning process will typically be energy self-sufficient, relying upon captured methane and other byproducts to fuel the coal cleaning process.

Business Activities and Strategy

The Company's business model at this stage is simple: to license our technology to third parties and exact a license fee, as well as a royalty fee, based on plant production. Over time, as the company builds up equity capital and cash reserves, opportunities to penetrate the coal business at different points of the value chain will be considered. Among these, direct investments in low-cost reserves, partnerships in mining or industrial projects, or trading may be contemplated.

Research and development will be a key focus going forward. The highest priority will be on the commercialization of our Pristine process, but there are various other product areas including biomass where our technology may prove relevant.

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Competitive Strengths

We believe our technology and designs represent the only process that can effectively separate and capture pollution-causing chemicals prior to carbon combustion in a commercially viable manner. Our process differs from competing processes through its ability to maintain the structural integrity of coal during the heating process. This is achieved through a unique design that inserts inert gas into the heating chambers, and maintains the inert atmosphere in each chamber. By inserting an inert gas into the chambers, the process allows for rapid heating of the coal and prevents coal combustion and significant coal dusting. Competing technologies have used differing methods of preventing coal combustion and dusting, albeit with limited success. Some of the particular strengths of our process include:

Pollution reduction: By heating coal prior to combustion, we are able to extract volatile matter (pollutants in the form of solidified gases) from the coal in a controlled environment, transforming coal with high levels of impurities, contaminants and other polluting elements into a more efficient , cleaner source of high energy, lower polluting fuel. Testing has demonstrated that our process removes a substantial percentage of harmful pollutants, including mercury.

Lower cost of operation: We believe that our process will be a relatively low-cost solution to the reduction of pollution at coal-fired power facilities. SEE&I (formerly Benham), our engineering consulting firm, believes that our coal cleaning process will typically not require any external energy and can be fully fueled by the methane and other byproducts that the process captures from raw coal. This effective use of byproducts contrasts markedly with emissions scrubbers that generally use a portion of the generated power and have high initial capital and maintenance costs. In addition, our process may have certain advantages in terms of the pollutants removed that can be utilized in a complementary manner with other processes including scrubbers.

Increased flexibility in feedstock: Our process eliminates both the moisture and volatile matter in raw coal, increasing the heat capacity of standard sub-bituminous low-rank raw coal from approximately 8,000 BTUs to an average of 12,500 BTUs. We believe the process can increase heat capacity of lignite raw coal ranging from 4,000-7,000 BTUs to a range of 9,000-10,000 BTUs. As the worldwide supply of high-BTU bituminous coal dwindles, our technology may enable coal-fired plants to effectively utilize the abundance of low-rank coal.

Favorable price arbitrage: Low-rank coal in Asia with a heat content of 7,000 – 9,000 BTUs currently sells for approximately $30 per ton in the world market, compared to high-BTU bituminous coal with a heat capacity of 10,000+ BTUs, which sells for approximately $100 per ton, as can be observed in various international price indices, among them, the Baltic Dry Bulk Index. Our process essentially transforms low-grade coal into bituminous coal at a direct cost of an estimated $7 - $8 per ton, capturing the value of higher-grade coal prices.

Potential tax benefits: We believe clean coal production tax credits may potentially be available for coal processed in facilities utilizing our technology. While these credits expired on January 1, 2009, Congress may consider legislation extending the credits.

With regard to our Pristine-M process to be completed during Q2 2013 we expect that it should enable us to transition quickly into full commercial mode.

Competition

At this filing, the coal upgrade industry globally, excluding coking processes, remains in its infancy. The penetration rate of technologies focused on de-watering coal is well under 1% based on annual production of thermal coals measured in the billions of tons. There are numerous competitors in the pre-combustion, upgrade segment but many of these have failed, are inactive, or in pilot mode. The Company believes that it is still in a position to enjoy

early-mover advantage if the pilot plant and the commercial modules are successfully developed during 2013.The difficulties experienced by the Company's competitors fall into three categories: the technologies have failed to scale up; they are expensive and, therefore, challenge the economics of the process; or they have failed to produce a stable end product, that is, a product that does not reabsorb moisture and is safe to transport with minimal risk of spontaneous combustion. From a scale-up perspective, CCTI's Pristine M technology faces a much smaller challenge as it is a modular system built around well-known and proven components. Scalability issues are mitigated by the modular nature of the industrial design that, once the basic module is operational, will scale up by simply adding identical modules. We consider it a major competitive advantage that our clients who build large capacity plants will not be building a single processor based on what are likely to be new and innovative components.

From a plant reliability and maintenance perspective, our modulararity brings many advantages that the Company believes enhance the competitiveness of its offering. These benefits are in the area of maintenance and down-time risk

From a planning perspective, mine operators would be able to expand their capacity piecemeal rather than in step-wise fashion by large-scale increments. This mitigates much of the financial risk normally attendant on large-scale plant expansions and, over time, our modular design may prove to be one of the most significant competitive advantages of our process.

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Another significant competitive advantage of either of the Company's processes is that these do not require crushing of the coal, thereby minimizing if not entirely eliminating the need for costly briquetting. CCTI's plant economics are compelling as they derive much of the process heat from the feed coal itself, rendering the processes very energy efficient.. The processes require a modest amount of electric power and a small number of operatives. Consequently, our operating costs are very competitive.

The Pristine process not only removes the moisture, but also removes the harmful volatiles and pollutants which we capture as a chemical "soup" that may be further refined by us, or sold directly to chemical manufacturers, or refineries as a complementary revenue source. The Pristine process addresses a very different market need than the Pristine M Technology and therefore enables CCTI to offer a more diverse product slate to our potential customers than most, if not all, our existing competitor base.

We consider our most direct competition in the reduction of coal emissions comes from companies offering pre-combustion cleaning designed to remove impurities. However, post-combustion filtering or "scrubbers" designed to filter released gases are a clear alternative for coal-fired power producers. We are not in competition with suppliers of emissions scrubbers, except to the extent that that burning a cleaner fuel is more economical than post-combustion solutions.

The best known competitors in the pre-combustion area include Evergreen Energy, Inc. ("Evergreen"), Kobe Steel ("Kobe"), GTL Energy ("GTL") and White Energy ("White Energy"), both the latter of which are Australian companies. There are operators that utilize older, less efficient technologies such as the Fleissner process, but these are not as effective the newer technologies. Evergreen, based in Denver, Colorado, developed a technology primarily focused on reducing the moisture in raw coal to increase its heating capacity. The company declared bankruptcy in 2012 after suffering problems having to do with the stability of the end product. CoalTek, based in Tucker, Georgia, claims its patent-pending process uses electromagnetic energy to reduce contaminants and moisture in coal prior to combustion. While public information is limited, we believe the amount of energy necessary to run the electromagnetic process may offset any economic benefits of the upgraded coal. The Australian processes use a combination of heat and compaction to remove moisture from coal. The company is not in commercial mode. White Energy claims that compaction generates close bonding between the dried coal particles to form a high density, higher energy content briquette. Energy requirements for heating coal an operating a pelletizer are typically large but no basis or explanation is provided for the favorable cost numbers published by White Energy. During 2012, White Energy was forced to abandon further investment in its flagship 1 million ton facility in Indonesia that suffered serious scale-up problems. The Kobe process is proven. However, the plant is complex and, consequently, very expensive. One significant plant in Indonesia shuttered a Kobe plant during 2012 owing to unfavorable process economics.

Indirect competition comes from alternative low-pollution energy sources, including: wind, bio-fuels and solar; all of which need additional technological advancements, cost reduction and universal acceptance to be able to produce power at the scale of coal-fueled plants, which today produce 43% of world's electricity according to U.S. Department of Energy figures published in May 2008.

Patents

Our technology is the subject of U.S. patent #6,447,559, "Treatment of Coal" which was issued in 2002 and expires in 2019. We filed a PCT international patent application with this U.S. patent on February 1, 2006, and, in accordance with this, patents have been applied for in all countries where we believe our technology has application. On February 2, 2011 CCTI was awarded a continuation patent US #7,879,117.

On October 14, 2010, the Company filed PCT International Patent applications based on our revised design in India, China, Indonesia, Australia, South Africa, Colombia, Brazil, Chile, and the Republic of Mongolia. These were filed

by our patent attorneys Nixon & Vanderhye P.C. at a cost of $33,000. On October 15, 2010, the Company filed the PCT national phase application for its revised design as contained in PCT/US2008/060364.

In conjunction with SEE&I's commercialization design of the original patent, we filed for an additional patent on March 31, 2008. We filed a PCT application with this as well, affording it the same protection as noted above. The March 31, 2008 application details the process of using byproducts to power the process, and details a simpler, vertical factory design with proprietary seals that help preserve the atmosphere of each chamber, compared to a horizontal design in the original filing. This application goes into great detail regarding the byproducts of the coal and their capture.

Our patent details a process wherein coal is heated to different temperatures in various chambers with controlled low-oxygen atmospheres. There are seals between these chambers, serving to maintain the heat and gas content in each chamber. The invention notes the controlled de-volitization and removal of moisture and organic volatiles, while maintaining the structural integrity of the coal and reducing the level of disintegration into powder form. The invention also notes the significantly decreased time in treating coal as compared to alternative approaches, most of which focus on moisture removal as a means of increasing calorific or BTU value.

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In September, 2011, the Company filed a provisional patent application that seeks to protect a new invention for the reduction of moisture inherent in coal, and stabilization of the final product. Testing to date indicates that our stabilized product will be resistant to moisture re-absorption and safe to handle, even over long distances. The new invention draws from the scientific knowledge embedded in our existing patent, but it is an entirely new concept that is easily differentiated from the offerings of our competitors. The most novel aspect relates to the stabilization of the end product and to the ability to enhance the heat content of the coal beyond what would be normally achieved by moisture removal alone. The product is banded Pristine–M.

From a commercial perspective, Pristine-M is proving to be attractive to clients not only because of its characteristics, but because the industrial design is simple, elegant and inexpensive. We estimate that operating costs will fall between $7 and $8 per ton, including $2.00 per ton on-going maintenance. The cost of the commercial plant is expected to be highly competitive, based on preliminary estimates.

We expect to file for additional patents as we continue the commercialization of our technology and factory design. We intend to continue to seek worldwide protection for all our technology. The following table provides a summary of our technology to date.

Description of Patent	U.S. or Foreign Patent Application/Serial No.	Issue Date or Date Filed	Brief Description/Purpose
Process for treating coal to enhance its rank.	Issued US 6,447,559	09/10/2002	The process reduces the time, capitalization, and production costs required to produce coal of enhanced rank, thus substantially increasing the cost effectiveness and production rate over prior processes.
Continuation patent application directed to process for treating coal to enhance its rank.	Pending US Application11/344,179 issued as Patent 7,879,117B2	02/01/2011	Continuation of parent USP 6,447,559 – seeking broader protection
	Pending in China 818174.8	11/02/2000	Counterpart to ‘559 US patent
	Granted in Canada 2,389,970	11/02/2000	Counterpart to ‘559 US patent
	Pending in EPO 992027.3	11/02/2000	Counterpart to ‘559 US patent
	Pending in Indonesia W-00200201274	11/02/2000	Counterpart to ‘559 US patent
	Pending in Hong Kong 3107833.3	10/30/2003	Counterpart to ‘559 US patent
Coal Enhancement Process	Pending PCT/US2008 International application designating all countries	4/15/2008	Improved process for increasing rank of biomass which reduces the time, capitalization, and production costs required to produce coal of enhanced rank, thus substantially increasing the cost effectiveness and production rate over prior processes.
	Pending: Australia, Brazil, Chile, China, Colombia, India, Indonesia, South Africa, Republic of Mongolia.	10/14/2010	Additional PCT international Patent applications filed.
		9/14/2011	

Moisture Reduction/Substitution	U.S. provisional application Serial No. 61/531,791	Low-cost process for removal of moisture from coal, involving partial de-volatization and unique stabilization of product.

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Governmental Regulations

Environmental Regulation Affecting our Potential Market

We believe that existing and proposed legislation and regulations could impact fossil fuel-fired, and specifically coal-fired, power generating facilities nationally and internationally. According to the U.S. Environmental Protection Agency, or EPA, power generation emits substantial levels of sulfur dioxide, nitrogen oxides, mercury and carbon dioxide into the environment. Regulation of these emissions can affect the potential market for coal processed using our technology by imposing limits and caps on fossil fuel emissions. The most significant, existing national legislation and regulations affecting our potential market include the Clean Air Act, the Clean Air Interstate Rule and the Clean Air Mercury Rule, which are described further below.

State and regional policies may also impact our market. The Regional Greenhouse Gas Initiative requires reduction in carbon dioxide emissions from electric generating units, beginning in January 2009 in 10 northeastern states. The state of California has adopted a stringent greenhouse gas policy that will affect coal-fired electricity generated in and imported into the state. And the Western Climate Initiative, a coalition of 7 western states, is working on a regional, economy-wide greenhouse gas reduction program. Additionally, states are implementing emission reduction policies more stringent than national policy, such as, requiring more stringent mercury reduction than the EPA's Clean Air Mercury Rule and Renewable Portfolio Standards requiring robust renewable electricity generation.

The following briefly describes the most significant existing national laws and regulations affecting the potential market for coal processed using our technology.

The Clean Air Act and Acid Rain Program. The Clean Air Act of 1970, as amended, is currently the primary mechanism for regulating emissions of sulfur dioxide and nitrogen oxide from coal-fired power generating facilities. A key component of the act regulates sulfur dioxide and nitrogen oxide emissions. Specifically, title IV set a goal of reducing sulfur dioxide emissions by 10 million tons below 1980 levels and imposed a two-phased tightening of restrictions on fossil fuel-fired power plants. Phase I began in 1995 and focused primarily on coal-burning electric utility plants in the East and Midwest. In 2000, Phase II began and this phase tightened the annual emissions' limits on larger higher emitting plants and set restrictions on smaller, cleaner plants fired by coal, oil, and gas. The Acid Rain Program calls for a 2 million ton reduction in nitrogen oxide emission and focuses on one set of sources that emit nitrogen oxide: coal-fired electric utility boilers. Beginning in January 2000, nitrogen oxide emissions are to be reduced 900,000 tons per year beyond the 1.2 million per year reduction set by the EPA in 1995.

Clean Air Interstate Rule. The Clean Air Interstate Rule was finalized by the EPA in March 2005. Once fully implemented, this rule will reduce sulfur dioxide emissions in 28 states and the District of Columbia by more than 70% and nitrogen oxide emissions by more than 60% from the 2003 levels. Through the use of a cap-and-trade approach, the rule promises to achieve substantial reduction of sulfur dioxide and nitrogen oxide emissions. Reductions of nitrogen oxide emissions begin in January 2009, followed by reductions of sulfur dioxide emissions in January 2010. The program will be fully implemented by January 2015.

Clean Air Mercury Rule. The U.S. Environmental Protection Agency, or EPA, finalized the Clean Air Mercury Rule, or CAMR, on March 15, 2005 to reduce mercury emissions from coal-fired power plants. Phase 1 of CAMR was set to go into effect on January 1, 2010. However, on February 8, 2008, the U.S. Circuit Court of Appeals for the District of Columbia vacated the rule, requiring EPA to draft a new regulation. As a result of this ruling, it is likely that individual coal-fired boilers and power plants will be held to stringent levels of mercury emission reductions instead of averaging mercury emissions across multiple plants and across the country.

Environmental Regulation Affecting the Construction and Operation of Plants Using our Technology

In the United States, future production plants using our technology will require numerous permits, approvals and certificates from appropriate federal, state and local governmental agencies before construction of each facility can begin and will be required to comply with applicable environmental laws and regulations (including obtaining operating permits) once facilities begin production. The most significant types of permits that are typically required for commercial production facilities include an operating and construction permit under the Clean Air Act, a wastewater discharge permit under the Clean Water Act, and a treatment, storage and disposal permit under the Resource Conservation and Recovery Act. Some federal programs have delegated regulatory authority to the states and, as a result, facilities may be required to secure state permits. Finally, the construction of new facilities may require review under the National Environmental Policy Act, or a state equivalent, which requires analysis of environmental impacts and, potentially, the implementation of measures to avoid or minimize these environmental impacts.

Any international plants will also be subject to various permitting and operational regulations specific to each country. International initiatives, such as the Kyoto Protocol/Copenhagen Accord, are expected to create increasing pressures on the electric power generation industry on a world-wide basis to reduce emissions of various pollutants, which management expects will create additional demand for our technology.