GreenTech OPPORTUNITIES

...Profiting From Innovations in Green Technology

A Fast Path To Greener Energy

INSIDE THIS ISSUE:

"Energy savings at the user level are far more important than it might appear on the surface."

Organizational Update

The first four issues of GreenTech Opportunities have been met with an enthusiastic response. We are more convinced than ever that a publication of this nature will play an important role in the evolution of the world to one that is less reliant on burning carbon-based fuels. Our objectives are to raise awareness in general of the investment opportunities and to help match investment funds with suitable companies.

We have now hired a full-time analyst who will play a central role in research and production of the newsletter (see the bio on page 2) . We have also been approached by a large number of experts who have pledged their support to our efforts. We are in the process of establishing a formal advisory board and informal network of experts to whom we can turn for specialized knowledge, ideas and due diligence. Further staff experts will be added to the team over time.

We have assembled an extensive list of small companies that are working on interesting and high-potential technologies related to the green energy field. Now, with expanded resources, our process of due diligence will be accelerated. This issue introduces two new companies. More will be coming in future issues.

We thank all of our subscribers for your patience and support during this initiation phase of the newsletter. Rest assured that subscription periods will be based on issues delivered, not months passed. From here on, we are committing to a regular schedule of one issue a month.

Again, we would like to express our extreme gratitude for the subscriber support that has made this publication possible and enabled us to move boldly to the next level.

October 21, 2009

Welcome to the team:

Peter Cox recently joined the GreenTech Opportunities team as an analyst, bringing a great deal of hands-on experience in the industry as well as an international perspective. Peter did graduate studies in housing futures (planning, sustainability, and economics) at the University College of London, England and an MBA in the Netherlands. Upon graduating from the University of British Columbia, Peter moved to Germany in 2001 to pursue a career in that country's nascent sustainable energy industry. After working in the wind-farm development field in Hannover, he went on to do an MBA in Energy and Environmental Management from the University of Twente in the Netherlands. He returned to Hanover to complete his MBA thesis on a green energy production and feed-in proposal. After completion of the master's degree, he remained with the local energy company (Stadtwerke Hannover) to continue development of the project on which his thesis was based. That project is now in production, based in part on Peter's thesis research. His work in Germany included experience in other aspects of green energy, such as Europe's most energy efficient building standard, the Passiv Haus and work on solar photovoltaic projects. Peter then returned to Canada to apply his knowledge and expertise closer to home.

In commenting on his new position, Peter said "I was determined to apply my knowledge and experience in the green energy field in a way that would make a difference. I am excited to be working with a group that has positioned itself on the leading edge of the search for companies and ideas that promise to improve our planet. I strongly concur that fostering innovation in small, entrepreneurial companies is a critical element in finding meaningful solutions. At the same time, I recognize how important it is that investors in this field realize suitable returns."

A FAST PATH TO GREENER ENERGY

Much of the effort in the green energy sector is focused on methods of producing energy in more sustainable ways. Hundreds of billions of dollars are being directed to constructing facilities that generate electricity from wind, solar, geothermal and other renewable sources. Over the coming years, as those facilities come into production, they will lessen dependence on carbon fuels.

Few people seem to realize that reducing energy consumption is vastly cheaper than producing more of it. Furthermore, saving energy has an immediate benefit. Switching to a more efficient light bulb, for example, saves money and reduces carbon from the moment the bulb is screwed in. Building a wind farm can take years to permit, finance and construct.

Few households have the skills or take the time to work out the payback period or the internal rate of return that could be earned by investing in energy efficiency. For those individuals who make the efforts, they can find paybacks ranging from months to a few years and rates of return that can be many times higher than the returns on the average investment portfolio.

Conservation efforts are largely dictated by offers of free money from governments to subsidize investments in energy efficiency. While somewhat useful in certaincases, most programs involving governments are anything but efficient.

Corporations around the world are routinely conducting energy audits. Teams of engineers and analysts are formally quantifying the savings that can be realized by investing to save energy. It has now become fashionable for

annual reports to carry accounts of how investments to save energy have favorably impacted the bottom line. Those accounts are intended more to secure social benefits points, but certainly speak to the enormous investment potential and the immediate returns available to conservation measures.

Multi-billion dollar corporations are finding meaningful earnings improvements by employing existing technologies to cut energy consumption. The savings in hard dollars provide a compelling motivation to invest to save energy. The growing pressure from customers and shareholders of big corporations to become green provides an added impetus that will propel corporations to seek greater savings.

Much of the energy savings can be achieved with little effort: better insulation for example. Most inhabitants of cold regions are conscientious about insulation to keep the heat in. But, people in warm climates often ignore the enormous waste of energy as they crank up the air conditioning in a poorly insulated home , store , or warehouse.

Energy has been so cheap and so abundant that little or no effort was devoted to energy efficiency over the past century. The incandescent light bulb, for example, is fundamentally the same as the design that Edison developed 130 years ago. Incandescent light bulbs waste 95% of the energy supplied to them. Yet, incandescent bulbs still account for a high proportion of lights. Switching to fluorescent bulbs can result in big savings, and a good return on investment. Yet, even fluorescent technology is pathetically inefficient, as those lights still waste 80% of the energy they draw.

The waste heat that is thrown off by light bulbs provides some benefit in winter in cold climates. However, in many cases, the waste heat from lights increases the amount of energy required for air conditioning.

Light emitting diodes (LEDs) are far more efficient. Those little blue lights on virtually every electronic device made in the past few years throw off light using only tiny amounts of electricity. Screw-in LED bulbs that are 90% efficient are commercially available. However at $50 each, they are not about to fly off the shelves, no matter how much guilt is imposed on consumers by the green movement. Surprisingly, even at $50 each, an LED bulb in a high use area would represent a good investment to a consumer, especially to those living in places with a high energy cost.

The interesting point is that we already have technology that will convert 90% of electricity to light (19-times more efficient than incandescent!). With further research and development, that technology will be implemented in a way that dramatically reduces electricity consumption. Clearly, more work is required to take the early stage LED bulbs to a state where they can be mass produced at a more favourable cost.

Yet, instead of fostering the development of LED bulbs, governments are actively promoting and subsidizing the use of a technology that is only one fifth as efficient.

Fridges, air conditioners, furnaces, pumps and virtually all devices that use energy are pathetically inefficient. Over time, innovations will enhance the efficiencies of all of those devices.

Energy savings at the user level are far more important than it might appear on the surface. Since coal is the biggest producer of electricity, let's look at a coal-fired facility feeding into a power grid to understand the whole

power cycle.

A typical coal-fired power plant converts about 30% of the energy contained in the coal to electricity. The balance of the energy available in the coal is lost to inefficiencies in the combustion chamber, the boilers, the turbines, the generators and to energy used by the facility itself. That 30% efficiency level has come after a century of fine-tuning every part of the system to improve efficiencies. Of course, those tweaks have been applied to a fundamental design hasn't changed in a century. Coal has been so cheap and so abundant that a 30% efficiency level has never been a concern.

The transmission and distribution system consume, on average, 9% of the energy fed into the electric grid. Therefore, if a volume of coal has an energy content of 100 units, only 30 units is converted to electricity and makes it into the transmission line. Only 27 units of energy of the 100 units initially available are delivered to the user.

Then, if the user turns on an incandescent light bulb, those 27 units of energy produce 1.4 units of light energy. Looked at from the view of the whole system, the 100 units of energy available in the coal are converted to a mere 1.4 units of light. Overall, 98.6% of the energy released in burning the coal is simply released to the atmosphere, having contributed nothing of value.

Looked at another way, to get a certain amount of light from an incandescent bulb, it requires burning coal with 73 times as much energy content as the amount of light produced. That is an obscene waste of energy.

"Consumers and corporations alike are now seeking alternatives that will allow them to save energy (be green) and save money. "

Admittedly, the incandescent light bulb is an extreme example. Few other products are 95% inefficient. Compact fluorescent bulbs are only 80% inefficient. Typically, appliances and industrial machines convert in the order of 30% of input to useable power, as in the example of the power plant.

Several important points emerge from this analysis. First, consumers and business owners around the globe stand to achieve enormous savings by investing and taking other steps to reduce energy consumption. A simple way to achieve that is to retrofit existing equipment with power saving devices. We will look at one such device later in this issue and others in later issues.

A second important consideration is the impact of conservation to the whole energy system, recognizing the inefficiencies in the generation and distribution systems. Following the above analysis, for every unit of energy used, 3.7-times as much energy must be burned. Conversely, by not consuming a unit of energy, 3.7-times that amount will not have to be burned.

Policy makers have clearly not fully factored in that multiplier effect on conservation. Over time, we are likely to see a growing awareness of the importance of conservation in public policy toward green energy. One can only hope that the government efforts will be aimed at fostering innovation, as opposed to efforts mandating particular applications.

By far, the most effective way to get people to change their behaviour is providing a clear monetary benefit. There is a growing wave of awareness of energy efficiency. Consumers and corporations alike are now seeking alternatives that will allow them to save energy (be green) and save money. Companies that develop energy saving products will be selling into a rapidly growing level of acceptance.

We are looking at several small companies that have developed, or are developing devices that can generate immediate energy savings and provide attractive paybacks for consumer and corporate customers. The first of these companies is introduced in this issue.

THE BIGGEST WASTE OF ENERGY

One of the biggest uses of energy is in transportation: cars, trucks, buses, trains, and all the other mobile equipment. With probably the worst score in energy efficiency, transportation easily ranks as the biggest overall waste of energy.

Shockingly, automobiles have not improved their fuel economies from the 1920s! Henry Ford's Model T averaged a healthy 25 miles per gallon – roughly what the vehicle sitting in your driveway uses. Today, the average North-American mid-size vehicle gets 27 mpg on the highway and 21 mpg in the city.

That is a huge improvement from 1973 when the average fuel efficiency was a paltry 12 miles per gallon. Yet, after decades of efforts, cars remain notoriously inefficient, no better than the first mass-produced cars in the 1930s.

Only 13% of the energy in a vehicle's fuel tank even reaches the wheels: 87% is lost to mechanical inefficiencies and heat losses in the engine and drive train as well as losses to idling and to operating accessories such as air conditioners. Of the energy delivered to the wheels, more than half is lost to friction of the tires, road and air. Just 6% of the energy in the fuel actually moves the car. When you consider that a typical car has a mass of 2,000 to 4,000 pounds, most of that energy is directed to moving the car. Of the amount of energy that was released in burning the gas or the diesel, only about a half of one percent actually accomplishes the objective of moving the driver down the road.

Clearly, the only way we can come anywhere near to full energy efficiency in transportation is with bicycles, hardly a practical solution in most instances. However, starting from a test score of 0.5 out of 100, the auto industry has enormous scope for improvements. Of course, consumers can contribute enormously to the solution, through car pooling, public transit and the like.

The automobile has benefitted from more than a century of engineering effort. Cars today provide every imaginable creature comfort and can even park themselves. Yet, the lack of progress in fuel use vividly illustrates how unimportant energy efficiency has been until very recently.

After the recent near-death experience of the North American auto industry, with the European industry not doing so well either, don't expect miracles in the near term. Much of the industry is in survival mode and will do little more than struggle to meet the incremental improvements mandated by the government. No doubt, intense lob-

bying from a nearly bankrupt industry will be successful in softening even those modest standards.

Hybrids have become popular among energy conscious consumers. By recapturing some of the energy in decelerating and in going down hills, hybrids are roughly 25% more efficient than regular cars. Hybrids are also typically offered in smaller models, so they may lure some people to downsize a little.

Electric cars are significantly more efficient than gas-powered cars. The electric drive system is inherently more efficient. In an effort to extend the range available from existing battery technology, a great deal of effort has been placed into making the cars lighter, the drive systems more efficient and in gaining aerodynamic efficiencies.

Replacing gas guzzlers with electric cars would reduce the overall energy consumption. However, in the near-term, a wholesale switch to electric cars would do little to reduce the fundamental energy problem.

At this time, coal is the leading producer of electricity, and still the source most likely to be developed for incremental power production. A complete changeover now from gas to electric cars would merely substitute coal for gasoline or diesel, with a small overall improvement in energy use. The era of electric cars awaits a big build-out of sustainable energy production.

"The modest roll-out of electrics that is underway is extremely important in setting the stage for the eventual transition of the industry. "

The modest roll-out of electrics that is underway is extremely important in setting the stage for the eventual transition of the industry. The auto industry is fine-tuning the technology and the public are gaining familiarity.

In addition to expanding green electricity production, there is an enormous amount of work to be done in several other fields before electric cars begin to dominate the auto market. For example, battery technology still needs a lot of work. A great deal of thought needs to go into the charging systems, especially away from home. More needs to be done to implement smart grids. We will have more to say on these topics in future issues.

INITIATING COVERAGE

Smartcool Systems Inc

(TSX.V: SSC)

Smartcool manufactures and distributes products which improve the efficiency of refrigeration and air conditioning systems. Thousands of the company's products have been installed worldwide in commercial sites such as supermarkets, food distributors, hospitals, and hotels. After several years of product development, the company established an international network of distributors. With multiple installations in each of its regional markets to demonstrate the energy saving value of the products, sales are poised to ramp up rapidly.

One of the key components in revenue growth expectations is the success with several huge multinationals. Various firms have installed the products in a handful of locations on a test basis. With hard evidence of the energy sav-

ings and confirmation of the reliability of the products, those organizations are now beginning to implement the technology in other operations.

Smartcool's products, which are compatible with present control systems, substantially reduce energy use by optimizing the operating cycle of the installed air conditioning or refrigeration systems. In the simplest terms, the company's Energy Saving Module (ESM)™ is a collection of little black boxes (actually, they are a stylish gray), each of which would fit comfortably in one hand.

The Network Controller is the brains of the unit. The System Interface Module is connected into the air conditioning or refrigeration control circuit, providing input to the Network Controller. The Intelligent Interface Module is used in place of the System Interface Module where more intelligence is required in the interface.

The Energy Saving Module, once wired into the air conditioning or refrigeration control circuit uses its sophisticated software to monitor the performance of the circuit. Over time, the ESM adjusts the off/on cycle to optimize the performance of the system.

The ESM enables the compressor to maximize the rate of heat removal by optimizing the natural physical properties of the compressor operating cycle. This process, known as "Compressor Optimization" can reduce compressor running time by up to 30% with no effect on the temperature conditions.

Importantly, the generic unit can be installed in any application without the need for site specific programming. All that is required is to connect the various compressors and thermostats that may be present in a particular configuration. The distributors of the Smartcool products are all experienced in this field and either provide that expertise directly or routinely work with contractors who do that kind of installation. A typical set-up takes a couple of hours.

The system was recently tested by Dell, one of the world's leading computer manufacturers, at its facility in Bangalore, India. After a four-week performance evaluation, the data demonstrated that the Smartcool system could reduce energy consumption in the air conditioning system by 16%. On that basis, the capital cost would be recovered in 21 months, making this an attractive investment. Based on that evaluation, Dell is now working with Smartcool and its distributors to implement the system in more locations.

SmartCool just secured an order for its energy saving technology that will be implemented in 50 convenience stores for the 7-Eleven Corp. in the Philippine capital of Manila. The order was the result of a four-month trial program which produced energy savings of approximately 12 per cent with a payback of less than 24 months.

Smartcool's ESM™ has undergone independent third party testing, including field and laboratory tests by Oak Ridge National Laboratory (ORNL) on behalf of Wal-Mart, the University of Miami on behalf of Florida Power and Light (FPL) and Los Angeles Department of Water and Power (LADWP). Results from these tests have independently verified the effectiveness of the technology.

Earlier this month, the company was awarded an important certification for its products from an internationally recognized research facility that covers Australasia. The certification confirms the product's ability to reduce en-

ergy consumption and it allows customers to claim increased levels of green building rating credits. Efforts are underway to achieve similar certifications worldwide.

The first ESM was developed in 1986 and to date 26,000 units have been installed worldwide. Smartcool was initially established in 2004 as a distributor for the ESM technology which was held by a private Australia-based company. In 2006, Smartcool acquired the technology, including intellectual property rights. In 2008, the company bought out a pre-existing distribution arrangement, giving it world-wide rights to the product. Over the past two years, it has established a network of distributors through which the products are available on a global basis.

To date, the company has been stymied by the long selling cycle required to implement the ESM. Once a distributor takes on the product, they must gain familiarity and then begin selling locally. Typically, months of effort are required to get to the point of a limited installation on a demonstration basis. Then, the installation is monitored for a period of months to verify the energy savings, and also to provide assurance that temperature conditions will remain unchanged and the ESM will not harm the existing equipment.

Just as those demonstration systems were beginning to turn in stellar reports, the world financial system crashed, putting capital spending projects on hold around the world.

Only now is the company beginning to see the roll-over of its demonstrations into larger sales orders. That process is on an upward trajectory, as the growing list of successful applications shortens the selling cycle and as more firms are moving toward broad implementation.

"Looking forward, Smartcool has the potential to multiply its revenues, with corresponding results on the bottom line."

The growing awareness of the investment value of energy savings is beginning to play into the marketing success. In addition, the mounting pressure from the public for companies to take action will certainly make it easier to close sales.

Another product line, introduced earlier this year, the ECO3™ provides similar benefits to residential and smaller commercial customers. This product line could be an important contributor to near term profits, as the selling cycle is much shorter than for the ESM.

An in-house research and development facility is committed to keeping the products at the leading edge of technology and is evaluating other applications.

According to the company's latest Management Discussion and Analysis: "There are no direct competitors at this time, and those few products that are geared towards energy efficiency in the air conditioning and refrigeration market do not provide the same package of benefits as does the ESM™ or ECO3™. Most other products aiming to save energy on air conditioning and refrigeration systems do not target the compressors, despite the compressors being responsible for most of the energy consumed by the system. Smartcool's products target the compressors specifically, and are miles ahead of the competition thanks to a solid technical foundation and certain unique features."

We have seen no evidence that the company's statement is inaccurate, although we have not conducted an exhaustive appraisal of potential competitors.

The Smartcool products also work with heat pumps, and can boost efficiencies in both the heating and cooling cycles. It is the only product that can achieve such benefits. Importantly, the direct energy saving products supplied by Smartcool qualify for energy saving subsidies for the purchasers of the products.

Revenue in the quarter ended June 30, 2009 was C$510,844, resulting in a loss of C$929,730. Backward looking performance evaluations have clearly been the deciding factor for investors to value the company. At the present share price, the company has a market value of only C$8.86 million. The company has enough cash on hand to fund the operations as revenues ramp up to produce positive cash flows.

Looking forward, Smartcool has the potential to multiply its revenues, with corresponding results on the bottom line. Smartcool's ECO3 product, with a mass-market appeal, was just introduced earlier this year. The past year was not a good time for businesses nor consumers to be making investments. The return to more normal economic conditions should spur sales of Smartcool products in general.

Another important consideration is that the energy conservation movement is still in its infancy. Over time, more corporate and institutional customers will recognize the bottom line benefits of using less energy. In addition, the soaring level of public support for reducing energy use will propel more companies to look at ways that they can conserve. As that process unfolds, Smartcool is well-positioned to be a leading supplier of demonstrated energy saving products.

Price, Oct 21, 2009: $0.20
Shares Outstanding: 44.3 million
Shares Fully Diluted: 49 million
Market Cap: $8.86 million
Contact: Investor Relations
1-888-669-1388
www.smartcool.net

Carmanah Technologies Corporation
(TSX: CMH)

Carmanah pioneered the development of stand-alone solar powered lighting systems and remains at the leading edge of that technology. More than a dozen years of product development and implementation have seen the company's products installed in a wide range of applications, including marine, aviation, telecommunications, traffic, construction and mining.

Much of the early focus was on products that had to meet stringent standards of reliability, such as marine navigation. The company worked with the likes of the Canadian Coast Guard to develop and refine products that meet the demands of the world's toughest applications and environments. That cutting edge technology development has

put the company in front in this field.

Carmanah is extremely interesting from the perspective of the revenue potential from its basic business, that being stand-alone solar lighting systems. Where there is no grid connection, customers are prepared to pay a premium for the high standards and reliability of the Carmanah products. On that basis alone, the company is trading at a discount to its projected revenue and earnings. (More on that later.)

There are two developments underway that have the potential to take Carmanah's products to a much greater market, potentially multiples of the current levels.

First, the growing popularity of "going green" is opening an entirely new market segment. Companies that want to project a green image have begun to install Carmanah systems. The premium in cost over using grid power to light parking lots and other open areas is small in relation to the green points that companies gain by using solar-powered lights.

"In addition, the soaring level of public support for reducing energy use will propel more companies to look at ways that they can conserve."

That brings us to the other pending development that could see sales of Carmanah products ramp up rapidly. In essence, the company is close to refining its technology to the level where its products compete directly with grid-based lighting systems.

To better understand the technology, let's have a look at how the company has evolved.

Based in Victoria, BC, the company pioneered the development of stand-alone solar-powered lighting systems. Those products were intended for use in remote applications where there was no alternative. At that time, cost was much less of a concern than having iron-clad assurance that the navigation lights in a well-travelled shipping channel were illuminated in every moment that it was dark. With more miles of coastline than any other nation on earth, Canada was a natural setting for that development work.

Carmanah quickly established a leadership role in the field of solar-powered lighting systems, as well as branching into several related fields. In part resulting from the financial crisis, the company has recently elected to bring its focus back to its core, divesting the peripheral business areas.

Carmanah is headed by CEO Ted Lattimore, who was formerly President and Chief Operating Officer of Vodafone Romania, a unit of Vodafone Group Plc, the world's largest mobile telecommunications company. His track record at Vodafone was impressive, including growing the customer base from 700,000 to 5.5 million in six years. His efforts earned the "Best Company in Romania" designation from The Economist. Lattimore managed a $300 million loan restructuring and the largest private placement in Romanian history. Lattimore joined Carmanah in 2007.

Chief Operating Officer Philippe Favreau holds Master's degrees in both commerce and nuclear sciences. Before joining Carmanah, Favreau was a group general manager of global operations at Kodak Graphics Communication Group, a multi-billion dollar a year business. Favreau was vice president of operations for CREO, Inc prior to that company's acquisition by Kodak.

Carmanah achieved its industry leadership role by being experts at integrating existing technologies. In essence, they scour the planet and select the best technologies for each component of the system: the photo-voltaic cell, the charging system, the batteries, the light sensors, the control systems and the lights. They have even developed leading edge optical covers that permit maximum light penetration, while optimizing the distribution of the light for particular applications.

A great deal of their research and development effort has gone into the control systems. Controlling a system that switches between capturing and storing solar energy and then using the stored energy to deliver light is surprisingly complex. Fine tuning the control system has been an important contributor to the high performance of their systems.

Carmanah was the first to incorporate light emitting diode, or LED, technology into their lighting systems. LEDs convert 90% of electric energy to light, compared to a 5% conversion for incandescent bulbs. While remarkably efficient, LEDs evolved as sources of minute amounts of light, typically used as indicators, not illuminators. A great deal of work world-wide has been devoted by numerous researchers to applying LED technology to area lighting, with only modest success to date.

The Carmanah research and development team has put a lot of effort into optimizing the LED technology, placing that team at the forefront of this extremely important emerging area. Their products, utilizing highly efficient LED technology, illuminate entire parking lots.

Much of the research and development efforts of Carmanah in recent years has been devoted to improving efficiencies and reducing costs in order to make a product line with a broad market appeal. The company recently unveiled its latest product, dubbed the EverGEN 1710. This stand-alone lighting system is design for the general illumination market, with the formal product launch scheduled for early next year.

Following the business model, the latest product line was designed for off-grid applications. However, the market appeal is likely to extend to numerous on-grid applications. First, the Carmanah systems avoid the need for wires, which can add considerable expense when lighting large outdoor areas. Furthermore, the price differential compared to grid-powered lighting will be small in relation to the value of the green statement that companies will be able to make to employees, customers and the public in having solar-power area lighting.

The company generated adjusted earnings of C$0.02 per share last year, on revenue of C$61 million. Revenues took a big hit this year, on an economic-driven sales slump and the divestiture of part of its business, with revenue of around C$40 million expected to generate a loss of a couple of cents a share.

The new product line should propel substantial revenue growth next year, adding to rebuilding strength in the existing product lines. Growth in revenue next year should see the company generate a profit, estimated at C$0.08 per share. The present share price provides a low multiple to that projected earnings level.

The revenue and the bottom line figures could be easily surpassed if the new product line gets a warm reception. In view of the rapidly escalating appetite for green technology products, and the specific appeal of the Carmanah

product, we expect the sales figures will go well beyond the projections that primarily consider classic off-grid applications.

The next step in the evolution of the company could be even more exciting: Management has a goal of developing a product line that will compete head to head with grid-powered incandescent lighting. That goal appears to be within reach. The company is on top of the best technologies in all facets of its products, and in particular is expert in the application of LED technology. The key to success will be advances that bring the LED manufacturing costs down. Achieving that objective would see the new product open to a huge market. While this has to be considered blue sky potential at this time, it adds an intriguing element to a company on a path to generate solid revenue and earnings growth from its existing products.

Carmanah has just announced that its lights will be used to illuminate a Grand Prix race track in Abu Dhabi. The Formula 1 event, to be held from October 30 to November 1, will include the first Formula 1 venue to start a race in daylight and end during night time. This is just one example of solar powered lights being used in an application where conventional power is readily available. With international media attention, and the first such race to extend into darkness, Carmanah's lights will attract a great deal of attention. This may be a small item in itself, but is clearly an indication of the potential for solar-powered lighting systems such as those supplied by Carmanah.

"The company is on top of the best technologies in all facets of its products, and in particular is expert in the application of LED technology. "

Price, Oct 21, 2009: $0.85
Shares Outstanding: 42.7 million
Shares Fully Diluted: 44.9million
Market Cap: $36.3 million
Contact: Investor Relations
1.877.722.8877
www.carmanah.net

COMPANY UPDATES

Magma Energy
(MXY-TSX)

Magma continues to advance towards becoming one of the top geothermal producers in the world. At the beginning of September, they signed an agreement to acquire 32.2% of HS Orka, the largest privately owned energy company in Iceland. The acquisition will be financed by an approximately USD$68.8m bond that is repayable in a single instalment in seven years time and approximately USD$29.5m cash. This deal follows an agreement in July that will grant it a 10.78% shareholding of HS Orka, plus an option to acquire an additional 5% of the company. If both of these transactions are realized, Magma will own a 43.1% direct interest in HS Orka and an option to invest $15 million in HS Orka's expansion plans, which would increase their stake to 48.1%.

HS Okra is the largest privately owned geothermal company in Iceland and has an installed geothermal power capacity of 175 megawatts. It also generates 150 megawatts of thermal energy for district heating. Expansions are planned that will increase HS Orka's geothermal capacity to 425 megawatts by 2015. Much of HS Orka's power is sold under contract to a large aluminum smelter and the proposed expansion will provide power to a new smelter that is currently under construction.

Magma's chief executive, Ross Beaty, said, "We view this as a long term investment in HS Orka. We intend to work closely with all stakeholders to maximize HS Orka's value for all. The transaction provides HS Orka with a strong financial partner and provides Magma with exposure to Iceland's substantial geothermal resources and highly skilled domestic workforce."

In other news, Magma completed two drill holes at its Soda Lake geothermal field in Nevada. The two wells contained maximum temperatures of 395 °F and 405°F, which make them the hottest holes recorded on the Soda Lake property. However, initial results show that fluid permeability is more limited than expected. Magma intends to more than double the property's gross generating capacity to 23 megawatts from 11 megawatts. The company is using the recent drill data to determine if the new wells drilled will be sufficient for the planned expansion.

In addition to the drill results, an engineering assessment of power plant upgrades and refurbishments was completed on the Soda Lake Geothermal operations.

Magma released its fourth quarter report this month, which showed that as of June 30 the company had almost $4.5m in cash. For the year, Magma had a net loss of $4.46m ($0.03 per share), which included a write-off of approximately $1.1m from expenditures incurred on their Carrán property in Chile, which was relinquished at year end. Ross Beaty said, "Magma Energy had a great first full year of operations. We put together a world-class exploration and operating team, raised more than $130 million in tough financial markets, acquired one producing asset in Nevada [Soda Lake], built up a large land position of geothermal exploration properties in Nevada, Idaho, Oregon, Peru, Chile and Argentina and, just after year-end, entered into agreements to acquire a minority interest in another producing asset in Iceland. Magma ended the year with a successful initial public offering and listing on the Toronto Stock Exchange and is entering its second full year in healthy condition."

Magma's two year goal remains "to produce in excess of 100 MW by the end of 2010 and hold geothermal properties with independent estimates of more than 1,000 MW of geothermal production capacity."

Magma added a new Vice President of Corporate Relations to their team. Alison Thompson, MBA, M.Eng., P.Eng. has brought with her experience working as a Project Development Manager at a major Canadian energy company. She is also the Chair and Executive Director of the Canadian Geothermal Energy Association.

Price, Oct 21, 2009: $1.84
Shares Outstanding: 236 million
Shares Fully Diluted: 239million
Market Cap: $36.3 million

October 21, 2009

Contact: Investor Relations
604-687-0407
www.magmaenergycorp.com
Initiated coverage Issue 3, July 6, 2009 at: C$1.50

Natcore Technology
(NXT.TSXV)

Natcore's president, Charles Provini and technical consultant, Professor Andrew Barron conducted a presentation at the New Orleans Investment Conference last week, which gave investors an overview of the two potential revenue streams for the company. As outlined in previous issues, Natcore controls a remarkable new thin-film growth process that is applicable to solar cells. It can reduce the cost of existing cells and with further research and development promises for the first time, mass manufacturing of tandem solar cells that could deliver twice the power output of the best solar cells available today.

The company continues to conduct testing and expects to commercialize and produce revenue within the next year on certain applications of its liquid phase deposition technology applied to conventional solar cell manufacturing. The company also stated in that presentation that it was close to an agreement with a major manufacturer of solar cells. The deal, if it comes together as anticipated, would result in a fast-track program to incorporate the Natcore process into an existing manufacturing facility. After suitable testing, the manufacturer would use the process in at least one step of the process. That would be a huge advance for natcore, as it would fast-track the process into a real-world manufacturing facility. The experience would be invaluable in the on-going development efforts. Within a matter of months, if all goes according to plan, Natcore would begin to accrue revenue as the development effort proceeds.

The first commercial application of the LPD process will be for the deposition of critical anti-reflective coatings onto solar cells. By using a mild chemical bath at room temperature, Natcore is able to utilize thinner, less costly silicon layers than their competitors. The alternative method of depositing this material onto cells is to use large, expensive vacuum furnaces that reach temperatures of 1,800°F. As a result of the high temperatures needed, present manufacturers are forced to use thick, costly silicon panels in order to resist warping caused by the intense heat.

The basic manufacturing process is interesting in its own right. The huge upside is that the Natcore process promises to make tandem solar cells a commercial reality. In essence, tandem cells could produce twice the electric output and be cheaper to produce than present cells.

At the end of September, Natcore Technology signed a Sponsored Research Agreement with Rice University to develop thin films that incorporate silicon quantum dots. The research will be directed by Natcore's co-founder and technical consultant, Professor Andrew R. Barron, and will use the resources of the Barron Research Group. Natcore's liquid phase deposition technology was developed under Dr. Barron's direction. He is the Chair of Chemistry and a Professor of Materials Sciences at Rice University. He and Rice University are substantial shareholders of Nat-

core by virtue of vending the technology to Natcore.

The agreement with Rice will enable Natcore to determine methods for growth of quantum dot thin film structures using the liquid-phase deposition process (LPD). Under the new agreement, Natcore will explore an additional application for its LPD technology, the development of tandem solar cells, which incorporate quantum dots.

Unlike traditional cells which have a single layer that captures a specific limited range of wave lengths, tandem cells employ multiple layers that can absorb a greater range of wave lengths. The ability to harness more of the sun's energy is the key to the cell's efficiencies, which is over 30% - roughly double the output of existing cells.

The tandem cells will consist of three layers, stacked on top of each other. Two of these layers will incorporate quantum dots (see image to the right). Quantum dots are extremely small semiconductors, ranging from 10-50 atoms in diameter, which are heavily used in electronics. Natcore's key competitive advantage in developing this technology is that it would use its proprietary liquid phase deposition process to deposit the quantum dots onto each layer. In contrast, other players in the field are forced to use expensive vacuum deposition techniques at high temperatures. Despite being prohibitively expensive, tandem cells are available on the market today, but are used in limited applications. If successful, Natcore's technology will permit the cells to be mass manufactured at a drastically lower per unit cost.

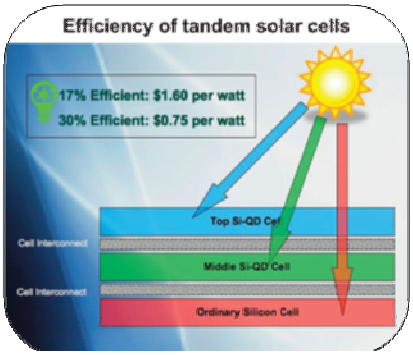

Diagram of the multiple layers of a tandem solar cell from Natcore's website

Charles Provini, President and CEO of Natcore, said "We are very excited to enter this next stage of our company's growth. We are continuing to advance the foundational portion of our business plan, which focuses on significantly lowering the costs of silicon solar cell manufacturing using our LPD process. But there is no denying that the potential to dramatically increase solar cell efficiencies remains one of the most exciting and potentially compelling applications of our technology."

In the investor presentation at the New Orleans Investment Conference, management presented some revenue projections. The numbers are highly speculative, but suggest revenues in the low tens of millions from the initial applications, but the potential for hundreds of millions if the tandem cell research pans out.

In other news, Natcore completed a C$1,165,000 non-brokered private placement. Each unit was priced at C$0.40 and was composed of one common share and one warrant, which will allow holders to purchase an additional common share at a share price of C$0.75 until August 2011.

Natcore's share price continues to tread water as investors await news. A manufacturing partnership, if that comes about, would provide a boost. Over time, more people will come to realize the enormous potential of the technology controlled by this little company.

Price, Oct 21, 2009: $0.33
Shares Outstanding: 23 million
Shares Fully Diluted: 31 million

October 21, 2009

Market Cap: $7.5 million
Contact: Investor Relations
877-777-NATCORE
Initiated Coverage Issue 2 May 25, 2009 at: C$0.36

GREEN FLASHES

Suntech Breaks Record

Suntech Power (NYSE: STP), a China-based solar company, announced that it now holds the record for silicon panel efficiency. The company's newly developed multicrystalline silicon panels are 15.6% efficient at converting the sun's rays into electricity. The previous record was held by Sandia National Laboratories at 15.5%.

U.S. Renewable Energy Grows

Electricity from renewable sources grew to a record 13% in May, according to recent analysis from the Sun Day Campaign. Total electrical generation, including fossil fuels, was down 4.1% from May 2008, according to the Energy Information Administration.

America's First Solar Tower Operational

The first commercial solar tower in the US began operating near Los Angeles. Built by eSolar, a private company, the project uses advanced software to precisely align the sun's rays, which are reflected from more than 20,000 mirrors spread over 20 acres, to the top of one of two towers. Heat receivers at the top of each tower turn water into steam. The steam drives turbines that can produce up to 2.5MW of electricity each.

China mulls Feed-in Tariffs

A proposed Chinese feed-in tariff (FIT) implemented by the end of the year will likely be US$0.16-0.22 per kWh of electricity produced at large scale photovoltaic facilities, according to Suntech chairman, Zhengrong Shi. Shi said, "This new type of solar policy will drive much faster growth in the Chinese solar market." China is already a leader in the photovoltaic industry.

Australia Goes Green

Australia's upper house passed a climate change bill that effectively mandates that 20% of electricity production must be from renewables by 2020. This is four times the renewable energy target that was set back in 2001.

The PV Market

Cell and module prices have fallen to around 40% of their 2008 highs, according to Renewable Energy World Magazine. The industry has been hit with fewer sales at lower prices in 2009, as the recession continues to take a toll.

The solar industry has suffered doubly because the market was substantially oversold entering this year with approximately 2GW of product in inventory at the beginning of the year. The vast majority of solar sales were in Spain last year (42%), but this year, due to cuts in the country's generous feed-in tariff program, orders have dried up.

Offshore Wind Power

A recent report entitled The International Offshore Wind Market to 2020 predicted that the offshore wind farm capacity will have risen from its current 2 GW to 55GW – a compound annual rate of 32%. The UK currently has the most installed capacity and projects under construction. There are a number of new entrants to the market place, which is dominated by Siemens and Vestas, including at least 10 Chinese firms.

Energy Efficiency

A recent report by McKinsey & Company has shown that an upfront investment of $520 billion in an energy efficiency program would yield energy savings of more than $1.2 trillion. Such a program would reduce energy end-use consumption by 9.1 quadrillion BTUs by 2020, or approximately 23% of projected demand, and abate up to 1.1 gigatons of greenhouse gases annually.

China's Potential

The China Greentech Report 2009, which is published by a group of predominantly Western companies, foresees an annual $500 billion to $1 trillion market for clean technologies. The report identified over 300 clean energy businesses that could realistically open in China.

The PhotoVoltaic Market

A report entitled The U.S. PV Manufacturing Industry: Outlook, Strategy and Opportunities was published by GreenTech Media Research at the beginning of the month. It estimated that U.S. PV cell capacity will grow at an annualized rate of 50% from 2008 to 2012. They forecast that thin-film will dominate the market, accounting for 2.69GW, or 67% of capacity by 2012. The report also found that more PV plants were announced in the first half of 2009 than in the last three years combined.

Google's Energy Czar Somewhat Downbeat on Green Breakthroughs

Reuters reported that Bill Weihl, Google's green energy czar, says there are a lack of companies that have ideas that would be considered breakthroughs in the green technology sector. He said, "I would say it's reasonable to be a little bit discouraged there and from my point of view, it's not right to be seriously discouraged. There isn't enough investment going into the early stages of investment pipeline before the venture funds come into play." He added that the U.S. government needs to provide more funds at the R&D stage saying, "I'd like to see $20 billion or $30 billion for 10 yrs (for the sector). It's pretty clear what we have seen isn't enough."

$1B Wind R&D Bill

The U.S. House of Representatives passed a bill at the beginning of September that will require the Secretary of

Energy to carry out $1 billion worth of research and development to improve the energy efficiency, reliability, and capacity of wind turbines.

Green Careers

A new report by the American Council for an Energy-Efficient Economy (ACEEE) has found that the energy efficiency provisions outlined in the American Clean Energy Security Act could create 569,000 new jobs over the next decade, in addition to providing every American household with US$283 in annual savings.

Ontario Moves Forward into the Green Age

Ontario, Canada, has proposed new feed-in tariffs that would result in the province having the highest solar feed-in tariffs in the world. Currently, Ontario leads the country in wind power and produces enough electricity to power more than 300,000 homes. The province has gone from 10 wind turbines in 2003 to more than 670 today.

Renting Roof Space

Recurrent Energy has rented space on several rooftops in order to install 4.8MW of solar panels. The lessor, ProLogis, receives a one-time construction management fee and annual rental payments. The lessee, Recurrent, owns and operates the panels and will ultimately sell the electricity their panels generate. In the United States, this model is being looked at by a handful of utilities, including Southern California Edison, which plans to install as much as 250MW on hundreds of commercial rooftops.

Green Venture Capital

Third-quarter green-tech venture capital investments rose to $1.59b representing 134 deals, according to the Cleantech Group. Another group, Greentech Media, found that venture deals in North America and Europe alone, tallied $1.9b. Although the totals differ, the trend is up from earlier in the year; however, it has not reached the levels of 2008.

Spiralling Consumption

According to Lester Brown, author of Plan B 3.01: Mobilizing to Save a Civilization, "if we assume that China's economy slows from the 10 percent annual growth of recent years to 8 percent, then before 2030 income per person in China will reach the level it is in the United States today." And, "If we also assume that the Chinese will spend their income more or less as Americans do today, then we can translate their income into consumption."

"If we assume that in 2030 there are three cars for every four people in China, as there now are in the United States, China will have 1.1 billion cars. The world currently has 860 million cars. To provide the needed roads, highways, and parking lots, China would have to pave an area comparable to what it now plants in rice. By 2030 China would need 98 million barrels of oil a day. The world is currently producing 85 million barrels a day and may never produce much more than that."

Brown's fundamental message is that we must "build a new economy—one that is powered largely by renewable

sources of energy, that has a much more diversified transport system, and that reuses and recycles everything.

GREEN TECH OPPORTUNITIES

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Soros Goes Green

Billionaire investor George Soros is now intending to make his next big bet on clean energy technology. At the beginning of the month, Soros announced that he plans to invest $1 billion in the sector and another $100 million, in $10m increments over the next ten years to fund the newly created Climate Policy Initiative. Soros has not divulged too many details about his investment plans in order to avoid a "Soros premium" on potential investments.

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