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**The Magic of EIPC's Nanotechnology**

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Smaller, Cheaper, Longer-lasting, Enable IPC's mission is turning patented technologies into commercial renewable energy products to help enhance existing market leaders.

By Tony Hoffman

Enable IPC Corporation (OTC BB: EIPC-0.092) combines an experienced successful management team with exciting breakthrough patented alternative energy technologies. On the surface today's potential investor sees only a cash strapped start-up whose shares have declined over 80% in the last year.

One must look beneath the surface to understand what's so exciting. If EIPC raises new seed capital and launches its new products, EIPC could grow and become a dominant technology company serving future markets valued at over \$3 billion versus its recent total stock market cap of under \$3 million.

That is a huge value gap. Clearly, it is important to understand what its entrepreneurs are trying to accomplish. Chairman, President and CEO David Walker has heard his share of *Back to the Future* jokes. Their focus is about the ultracapacitor, the very first product his start-up is bringing to market. He assures us, however, that unlike the "flux capacitor" in the movie, Enable's ultracapacitors don't make time travel possible.

Yet they do some amazing things and bring a futuristic innovation to fruition and to bear on the real-world problems of today. Enable is providing a 21<sup>st</sup>-century twist to a very old device. The capacitor was invented in 1745, and the ultracapacitor, which can have a storage capacity many thousands of times that of ordinary capacitors, in 1957. Its applications are as diverse as powering unmanned drone aircraft, protecting personal information on credit cards, radio frequency identification tags, remote sensors and protecting smart cards from identity theft, prolonging the life of car batteries-or even replacing them in hybrid cars.

Yet in order to bring its exciting new products to market and fund its operations, cash-strapped development-stage Enable IPC needs to raise more seed capital. Fortunately,

in an earlier similar situation co-founder Walker was able to raise \$10 million in private placements for start-up DCH Technology, which went on to an American Stock Exchange listing. He understands that a major part of every entrepreneur's job is to bring in enough capital to achieve its own corporate dream.

"IPC stands for intellectual property commercialization." Walker begins. "That's what we do; we acquire patented technologies that are in the lab, turn them into commercially ready products and then license or sell the key components to companies that are in already the leaders in those businesses."

In its ultracapacitor, Enable is working with the University of Wisconsin (UW) and SolRayo LLC, formed by the UW researchers who invented this particular ultracapacitor technology, to develop and commercialize it for use in consumer electronics, and eventually for industrial applications with the recent expansion of their exclusive license from UW.

In essence, a capacitor is two plates that conduct electricity, separated by a non-conducting medium. The plates store energy by building up a charge (with one plate positively charged, and the other carrying an equal negative charge). Unlike batteries, capacitors don't produce energy—they just store it. Yet they can build up and release a charge a lot quicker than a battery. A good example is a camera flash. There the capacitor builds up a charge and releases it very rapidly as the flash is fired.

Ultracapacitors have a very thin double layer of material between the plates, and employ a micro-porous material with a large surface area such as activated charcoal in place of an insulator.

### The Magic of Nanotechnology

It's that porous layer that Enable is focusing on. "We take commercially available pieces of carbon, we dip them in what I call a magic solution (it's actually a solution of suspended nanoparticles in a liquid), and then we put them in the oven," says Walker. "That greatly increases the surface area of the carbon. This allows us to put out a significantly higher amount of capacitance than competing products and at a substantially reduced price, overall, because we need a lot less ancillary material. This is what the industry is looking for, and because we have it patented, we're in an enviable position financially going forward when you sit down and calculate the profitability based on volume, which is how these are going to sell."

What are the nanoparticles in the "magic solution?" None other than tiny grains of silica such as comprises much of sand, which normally is a nonconductor. When subjected to EIPC's patented process, though, it allows ions to conduct.

Silica conducting electricity, and making a better capacitor? This counterintuitive notion has met with some skepticism among prospective investors and clients. "A number of people can't understand this; how it works," says Walker. "One of our strengths is in being open-minded in evaluating and recognizing commercial technologies."

Enable and SolRayo's preliminary testing showed significantly better performance than their target expectations. "Our ultracapacitors can provide approximately double the power in both the lower-frequency and the higher-frequency ranges than other commercial devices," says Walker. "The energy available in our ultracapacitors bridges

the gap between standard electrochemical capacitors and batteries. One of the knocks on ultracapacitors is that, although they put out a lot of power all at once, you can't store as much energy in it as you can a battery. Ours, however, allow a lot more energy storage than most. In fact, we rival some batteries in the amount of energy we can store."

Another advantage suggested by the testing is that they can last longer than most competing products, retaining their capacity through at least a million charge-discharge cycles. A lead-acid battery in a car can typically go about 1,500 to 1,600 cycles before it's essentially used up. Ultracapacitors are generally in the hundreds of thousands of cycles-most hover around 500,000 cycles. A few-including some made by Maxwell Technologies, the largest ultracapacitor company in the world- can do a million cycles.

Enable's initial revenues are expected to come from the following four main product areas: military aircraft, credit cards, consumer electronics and industrial applications. These four opportunities represent an estimated \$120 million in combined potential revenue. And these are just the first areas the company is exploring. The Company believes that its profitability will be secured from the sheer volume of anticipated orders, once beta testing is completed by several different OEM's, which due to non disclosure agreements cannot be discussed further.

Thin-skinned ultracapacitors could also be used to replace the relatively heavy batteries in small, unmanned drone aircraft used in military and police work. "These airplanes run on electric motors to be silent while being deployed to enemy targets," says Walker. "We're working with a company to replace the batteries in drones with thin capacitors that would essentially, end up being embedded in the skin of the airplane. What that would mean is the airplane would be able to fly for about five hours as a drone aircraft, do what it needs to do and then land and probably take only about 10 or 15 minutes to recharge, and then take off again to complete another mission."

Enable has been in discussions about using its ultracapacitors in concert with a battery or another device to provide power, and added security against fraud and identity theft to smart cards-which are essentially credit or similar data cards (like ones for health insurance) with a chip inside them. This market alone has a tremendous potential. End users are talking about quantities in the hundreds of millions of units per year. "In the cases of the two companies we're working with, the credit cards will have a small display that provides a PIN or other unique number or combination," says Walker. "The idea is the card will generate a one-time-use number for one particular charge that is determined by an algorithm within the chip that's embedded in the card that's the same algorithm that the bank is using. That way, it will help lessen identity theft, or prevent at least some versions. We are very excited about this particular use. While not popular yet in this country, the Europeans have already taken to the single use smart card, and we expect the same transition to happen here, as does the OEM which we anticipate will be one of our biggest customers."

Among the numerous consumer electronics products that could make use of Enable's ultracapacitors are LED displays, printers, scanners, small hand held power tools, toys and cellular phones.

Ultracapacitors could also be used to prolong the life of batteries. Enable has been in discussions with a Midwestern electronics firm about coupling ultracapacitors with that company's power electronics as well as with a lead-acid battery. "With the ultracapacitor

essentially taking some of the heat off the lead-acid battery, the life of the battery will be lengthened by a significant amount of time," says Walker.

Due to the overwhelming response for the ultracapacitor since announcing the breakthrough of one million cycles in December 2007, the separate revolutionary product area of microbatteries in which Enable has also has acquired technology has been placed second in development priority. But it too has explosive potential. When Enable was founded in 2005, its immediate aim was to commercialize a microbattery technology being developed by Dr. Sung H. Choi, who is now Enable IPC's Technical Advisor and a principal stockholder. A task manager in nanotech research with Caltech since 1999, Dr. Choi is the author of six patents (two pending) and forty papers in the field of nanotechnology and MEMS (micro-electromechanical systems). He assigned his patent application for this technology to Enable. It seeks to improve thin-film lithium batteries by using nanowires-tiny poles or rods only about 1/1000 the width of a human hair-to increase the surface area of a battery cathode and the power that it's able to generate. The patent application covers a specialized method of manufacturing these nanowires.

Enable believes that this technology will help it to make cathodes that will significantly reduce costs and improve performance in comparison to other thin-film batteries, while having fewer pollutants than conventional batteries not made of thin film. To date, the company has created prototype nanowire cathodes in a laboratory and used them to build a battery, which produced measurable current. Although Enable has calculated performance expectations on paper, it has not fully tested these cathodes. This technology is on the back burner until the company gets the funding needed to develop it, which hopefully will be within the next year.

Other technologies Enable has in the pipeline include a nano-biotech device-which uses some of the same manufacturing techniques of the microbattery but with different materials-and aero-military power systems. "One of the big issues that the Department of Defense faces has to do with the mobile soldier," says Walker. On a four-day mission, a soldier typically carries a battery pack weighing 20 to 40 pounds. "DoD is very, very concerned about reducing that amount of weight. We think we may have a solution, and we're hoping to develop it within 36 months. "This is just one of the reasons we don't want to just be known as the ultracapacitor or microbattery company," Walker continues. "We believe that we can commercialize a wide range of technologies over time, and thus smartly and profitably grow into the Intellectual Property Commercialization part of Enable IPC"

The first two market sectors that Enable hopes to compete in-first ultracapacitors and shortly thereafter microbatteries-are both rapidly evolving and highly competitive. At least 30 companies make ultracapacitors. In the microbattery market Energizer, Duracell and Rayovac, which sell batteries incorporating other technologies, dominate. Several small companies are also bringing some innovative technologies to this market. "The difference between Enable IPC and the existing major companies is that we are not trying to unseat anyone," explains Walker. "We just want to develop technology that those dominant companies already want and need, and through licenses and patents, we will get paid for helping them."

Walker is no stranger to developing new technologies and finding the money to finance them with over 20 years of experience in business management, primarily with high-tech startups. In 1994, he co-founded DCH Technology, Inc., a publicly-traded high-

tech energy and safety equipment. During his six -year tenure there, he negotiated license and joint venture agreements for the company's fuel cell and hydrogen sensor (which detect potentially explosive hydrogen leaks from fuel cells) technologies. At DCH, he teamed with Mark Daugherty, PhD, who served as Chief Scientist, Chief Technical Strategist and Vice President and General Manager of DCH's fuel cell operations. Daugherty is now Enable's Chief Technology Officer.

In March 2007, Enable IPC went public by means of an SB-2 self-filing and has relied on funding through private placements of equity, loans and contributions from its founders and their fans. It's basically been funded by a group of about sixty dedicated shareholders, most of whom have known Walker and his team for some time and have made a lot of money with him in the past. To fund development through March 2009, management needs to raise about \$2.5 million, which is not a huge sum considering the potential of the new products if they succeed.

Though an exciting process, bringing a development-stage company to commercialization is by no means easy. Fortunately for early investors in EIPC Walker and his team have done it before and can act with the confidence of veterans. You can be sure that they'll give Enable and all those exciting patents their best shot.

Risks: Enable IPC has a burn rate of \$30,000 a month, virtually no cash, no revenues yet and must rely on bootstrap infusions of capital from a small group of loyal shareholders. Enable's auditors have given EIPC a Going Concern Statement, raising doubts about its ability to survive without new capital. Enable faces extensive competition in both ultracapacitors (from which it has yet to see any revenues) and microbatteries (for which the company has yet to take the technology out of the lab). The world is waiting for what they have, but can this start-up organize to meet the challenge? Ending on a positive note, CEO Walker has overcome similar obstacles in the past. Now he must do it again.

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OTC Bulletin Board Stock Symbol: EIPC

Recent price: \$0.092

52-week range: \$0.05-0.50

Market Capitalization: \$2.5 million

Shares outstanding: 27 million

Shares fully diluted 30.5 million

Float: 5 million

2008 (FY ending March 31, 2008) est. EPS: (0.15)

Balance Sheet as of Dec. 31, 2007

Total assets: \$778,600  
Long-term debt: \$887,280  
Shareholders equity: (\$790,404)  
Book value/share: Negative

Cash balance at December 31, 2007: \$1,902  
Burn Rate as of December 31, 2007: ~\$32,500/month

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