Rating: Speculative BUY
Target Price: $3.75
Current Price: $0.62
UPSIDE: 505%

Price Chart


Stock information Reuters: VCRT.OB
Bloomberg: VCRT: US
Country: USA
Sector: Healthcare Diagnostics
M-Cap: $28.2 million
52 Weeks H/L: $ 0.50 - $ 1.00

VICOR TECHNOLOGIES, INC
Vicor is a development stage company which has developed a noninvasive diagnostic technology that measures heart rate variability to assess the risk of total mortality in patients with a number of life threatening conditions as well as the presence of autonomic nervous system dysfunction in diabetic patients. The company has received a 510(k) clearance from FDA to measure heartbeat rate variability and anticipates obtaining clearances for two more applications in 2010: as a diagnostic to identify congestive heart failure patients with a high risk of cardiac mortality (either from arrhythmic death or pump failure death) and to use its technology as a vital sign indicator to identify trauma patients requiring immediate life saving intervention (developed in collaboration with the U.S. Army). Studies for other applications are also underway.

Analyst: Vitalie Eremia, CFA

## INTRODUCTION

### Recurring revenues; high accuracy, low cost of technology

- Vicor's technology uses a proprietary algorithm and software to identify patients with the highest risk of death in patients with a number of life threatening conditions and the company reports that its technology is superior to others currently on the market. The superiority comes both from higher accuracy and from relatively low price. Importantly, the technology qualifies for medical insurance reimbursement which should stimulate usage among patients and physicians.

- Vicor's business model involves the generation of recurring revenue by charging physicians $40 per test to analyze the ECG data collected and to produce a report with Vicor's proprietary measure of heart rate variability (HRV) displayed for the physician to interpret. The hardware itself is relatively inexpensive, consisting of an internet-enabled laptop computer loaded with proprietary software and an electrocardiograph. We believe this pricing advantage will facilitate rapid adoption by physicians in USA and abroad, especially when the technology is reported to be very precise.

- The company has booked its first sales in Q1-2010, which signifies its transition to a fully operational business. We consider that it is only a matter of time until the company breaks even. There is one caveat though: we believe the company will require raising additional funding to finance its growth until its cash flows turn positive, which may significantly dilute the share base. The company has filed a preliminary prospectus for an upcoming issuance of equity, which will allow it to accelerate the commercialization of its products. Main other risk is the possibility that Vicor will fail to secure the FDA clearance for the intended uses of its technology, which can severely undermine the company's viability. However, from the data presented by Vicor, we feel that FDA will have no choice but to approve the applications sought as the technology promises to save many lives at a relatively low cost.

- Our valuation, based on the DCF technique, suggests a price target of Vicor's stock of $3.75 per share. But because the company has only started selling its products, we rate the company as a Speculative Buy.

Vicor: Key Financial Data

| $ millions | 2008 | 2009 | 2010e | 2011e | 2012e |
|---|---|---|---|---|---|
| Revenue | 0.0 | 0.0 | 1.0 | 5.3 | 17.4 |
| Operating income | -6.7 | -7.3 | -9.6 | -9.8 | -8.6 |
| Operating margin | n/a | n/a | -975.2% | -182.8% | -49.4% |
| Net Income | -8.5 | -6.6 | -10.9 | -10.9 | -9.6 |
| Net margin | n/a | n/a | -1107.0% | -203.9% | -55.0% |
| EPS, $ | -0.29 | -0.18 | -0.18 | -0.16 | -0.12 |

Source: OPUS

## EXECUTIVE SUMMARY

We initiate coverage on Vicor Technologies, Inc. with a SPECULATIVE BUY recommendation and a price target of $1.92 per share.

*Life saving technology*

We believe that Vicor's PD2i® technology has the potential to save millions of lives all over the world. Products that can determine the need for immediate life saving intervention in combat trauma victims as well as triage civilians in hospitals and emergency rooms, or accurately identify patients needing implantable cardioverter-defibrillators (ICDs), or provide other critical pre-death assessments that could save lives, will be highly sought and demanded by the world community and can provide Vicor with extraordinary reputation, resulting in a fat bottom line. Vicor is not there yet, but we believe that it has the potential to become such a company.

*Lack of competing technologies*

Vicor claims that its PD2i® technology is superior to technologies that are currently being used in all three areas where Vicor is involved: sudden cardiac death (SCD), autonomic nervous system dysfunction, and trauma triage. Contrary to the technologies used today that do not properly prioritize patients based on their life-threatening conditions, Vicor believes its products are able to accurately identify high-risk patients that are in need of immediate medical intervention which, while providing adequate treatment to all patients, could save millions of lives and significantly cut healthcare costs.

*More efficient healthcare system*

According to Vicor, about 15 million Americans meet current criteria to receive implantable cardioverter-defibrillators (ICDs), which cost about $75,000-$100,000 over the life of the patient. Thus, the total cost to the U.S. healthcare system to treat all these patients could exceed $1 trillion. Vicor also notes that based on published studies, more than 70% of this population will never use the device. In addition, some patients who need ICDs do not meet the currently applied criteria. Vicor's technology is reportedly more accurate in both cases and thus will not only help accurately identify those patients who really need ICDs, resulting in huge cost savings, but will also identify those who desperately need ICDs, but did not meet current criteria, saving lives that otherwise may not be saved.

*Huge market potential*

Vicor's technology addresses medical needs of millions of patients.

- **Cardiac patients.** There are over 81 million patients suffering from cardiovascular diseases in the United States.
- **Diabetes.** More than 24 million people in the United States, or 7.8% of the population, have diabetes, of which about 18 million are diagnosed. Furthermore, 57 million people have pre-diabetes, and 1.6 million new cases of diabetes are diagnosed in people aged 20 years and older each year.[i] An estimated 285 million people, or 6.4% of the world's adult population, have diabetes. The number is expected to grow to 438 million by 2030.[ii]
- **Trauma cases.** According to Vicor, there are 38 million trauma incidents in the United States each year.

Vicor estimates its total potential U.S. market at 77 million people, which translates into a $3.9 billion market for PD2i.

*High recurring revenue potential*

According to Vicor's CEO Mr. Fater, there are over 800 physicians that have vested interest in Vicor's products and who want to use the technology as early adopters. The company's survey shows that a physician can perform two tests a day, while a group of three-four physicians – 6-8 tests a day. 250 days of tests in a year could result in 2000 tests per three-four physician groups. Vicor charges $25-$50 per test, which translates into $50,000-$100,000 in recurring annual revenue from one device sold. If the company sells 1,000 such devices, recurring revenues could constitute $50-100 million per year. Considering that Vicor is conducting trials to expand the range of applications of its PD2i technology, these numbers may very well grow higher.

*Vicor has begun sales*

In January 2010, Vicor entered into an exclusive distribution agreement for the PD2i Analyzer™ in South Carolina, North Carolina, and the cities of Savannah and Augusta, Georgia, and sold its first PD2i Analyzer™ to a U.S. physician. Q1-2010 marked first commercial sales amounting to $100,000 for Vicor, and while this amount was somewhat below the company's own expectations, it still marks its transition to the commercialization stage.

*Multiple application claims*

In July 2010, Vicor submitted a 510(k) premarket notification to the FDA for its PD2i® algorithm and software to secure a claim for identifying, in conjunction with patient's medical history and other tests, congestive heart failure patients at elevated risk of cardiac mortality.

Vicor anticipates making various submissions to the FDA for marketing clearance for the PD2i Analyzer™ for additional medical claims, such as sudden cardiac death, trauma and, possibly, the diagnosis of diseases related to autonomic nervous system dysfunction. FDA approvals should allow Vicor to intensify commercialization of its products and significantly accelerate revenues from test analysis.

*Vicor's PD2i® technology may be the most promising diagnostic for in-field trauma triage*

In November 2009, during presentation at the American Heart Association's Resuscitation Science Symposium in Orlando, FL, a researcher with the U.S. Army Institute of Surgical Research (USAISR) Andriy Batchinsky, MD, identified Vicor's proprietary PD2i® nonlinear algorithm and software as a promising diagnostic for in-field trauma triage.

Vicor's PD2i® nonlinear algorithm and software, which require just one to two minutes of EKG data, were reported to provide consistently accurate results and to not be derailed in delivering actionable results by "noisy" or "raw" data.

*Extensive Collaborative Agreement with Universidad San Francisco de Quito in Ecuador*

In February 2010, Vicor entered into a collaborative agreement with the Universidad San Francisco de Quito in Ecuador to further awareness and use of the measure of heart rate variability.

*Medical insurance reimbursement*

Vicor's PD2i Analyzer™ has Current Procedural Terminology (CPT) codes, which enable doctors using this device to be reimbursed by public and private insurance carriers. We believe this reimbursement represents a good incentive for using Vicor's products.

*Experienced management team*

Vicor's management has extensive experience in leading large research and development biotechnology and medical devices projects, cardiology and electrophysiology, as well as in successful IPOs, mergers and acquisitions. Moreover, the company has assembled an impressive Scientific Advisory Board, including a renowned expert on arrhythmias and the author of a textbook on clinical cardiac electrophysiology, a leading electophysiologist and principal investigator in trials on ICDs prioritizations, former CEO of a cardiology device company, and former CEO of Cambridge Heart, Vicor's main direct competitor in SCD field. We believe this team of managers and scientists is strong enough to take the company to success.

*Funding to be obtained shortly*

In May 2010, Vicor filed with the SEC an S1 filing related to an upcoming sale of units of stock and warrants. Although the amount to be raised was not mentioned, we estimate that it will be in the order of millions of dollars. This financing should allow the company to accelerate the commercialization of its products and significantly improve the health of its balance sheet.

*Therapeutics development*

In its therapeutics platform, Vicor has succeeded in identifying several compounds which in early trials in non-hibernating animal species show great promise to ameliorate stroke, protect cardiac tissue from heart attack damage, reduce blood pressure, suppress appetite and cancer cell growth, and extend organ preservation time in transplant applications, ameliorate uremic toxicity in kidney failure and anesthesia recovery, etc. Currently, Vicor awaits additional funding to continue the project that was suspended in 2003 in order to concentrate on the commercialization of its PD2i Analyzer™. Should the company get the necessary funding to go forward with its therapeutics platform, we believe it has the potential to gain access to multimillion markets of stroke, heart attack, cancer and other patients, provided that this research proves to be successful.

## INVESTMENT RISKS

*Going concern risk*

Vicor has incurred significant losses in every quarter since its inception. As of March 31, 2010, the company had an accumulated deficit of approximately $56 million. At the same time, the cash balance was at $308,000, which is substantially less than the company's projected short-term cash requirements, especially considering that it needs to build up working capital to facilitate uninterrupted sales of its products and services. Since Vicor is just beginning to commercialize its products, it is expected to incur additional losses in the future as it continues R&D and commercial development. This raises doubts about the company's ability to continue as a going concern. This risk should be somewhat mitigated by the planned fundraising action, for which a preliminary prospectus has been filed with the SEC.

*Clinical trials may not support the viability of technology*

Conducting clinical trials is a long, expensive and uncertain process that is subject to delays and risk of failure at any stage. Moreover, the results of pre-clinical studies do not necessarily predict future clinical trial results and previous clinical trial results may not be confirmed in subsequent studies. Vicor may experience delays, cost overruns and project terminations despite achieving promising results in early tests. In addition, the data obtained from clinical trials may be inadequate to support approval or clearance of a submission. The FDA may disagree with the company's interpretation of the data from its clinical trials, or may find the clinical trial design, implementation or results inadequate to demonstrate the safety and effectiveness of the product candidate.

*Regulatory risks*

Medical devices are subject to extensive and stringent regulation by the FDA. The manufacturers of medical devices must comply with certain regulations that cover the composition, labeling, testing, clinical study, manufacturing, packaging and distribution of medical devices. In addition, medical devices must receive FDA clearance or approval before they can be commercially marketed in the United States. The FDA may require testing and surveillance programs to monitor the effects of approved products that have been commercialized and can prevent or limit further marketing of a product based on the results of these post-market evaluation programs. The process of obtaining marketing clearance from the FDA for new products could take significant time, require substantial expenditures, involve rigorous pre-clinical and clinical testing, require changes to the products and result in limitations on the indicated uses of the product. Additionally, Vicor, prior to marketing its products in Europe, may be required to receive the CE Mark certification, an international symbol of quality and compliance, with applicable European Community medical device directives. The risk of failing to obtain regulatory approval is somewhat mitigated by the fact that technology is noninvasive and represents little, if any, risk for patients, and thus faces less stringent criteria for approval.

*Uncertain outcome of commercialization*

Vicor had not sold any products before the latest reported quarter ended March 31, 2010. There is a risk that Vicor may have difficulties achieving widespread market acceptance for its products, which will depend on a number of factors, such as obtaining regulatory approvals and their timing, and the demonstration within the medical community of cost-effectiveness of its products and their advantages over existing technologies, as well as approved reimbursement for physicians. Notably, Cambridge Heart, Inc., the company whose products Vicor considers as a major direct competitive threat, has not generated any income in the last five years, although its products have been on the US, European, and Japanese markets since 2000.

*Stock dilution*

We believe that in order to finance its activities, Vicor will continue issuing stock or convertible debt that will dilute the ownership of existing stockholders.

## I. CONTENTS

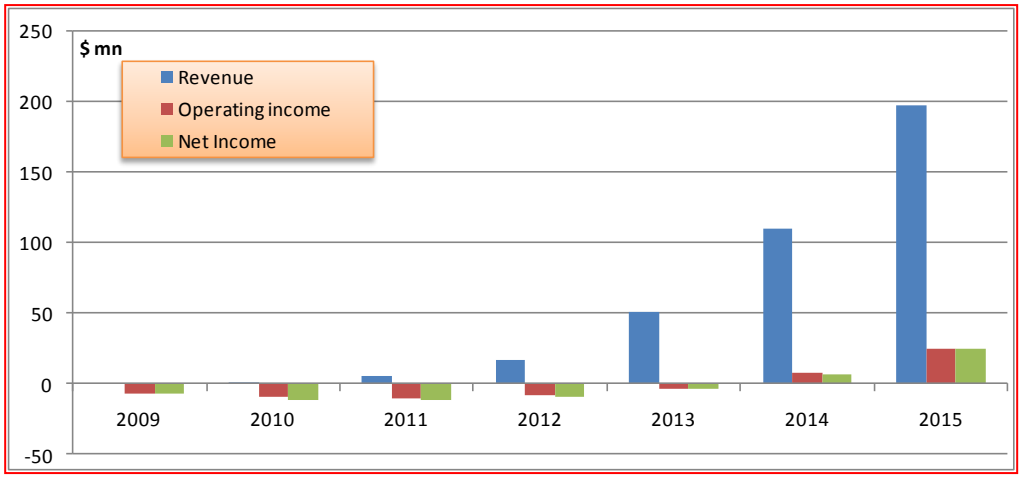
## II. VALUATION

Since Vicor is only beginning to transform from a development stage company into an operating one, valuation options are quite limited. We do not expect the company to reach its maturity sales and net profits until 2014, thus comparative multiples-based valuation cannot be done, as analyst consensus data for peers is generally available until 2011 only. We thus have valued Vicor using the DCF approach, based on our projections of the company's sales and cash flows.

### II.1. REVENUE FORECAST

*Quick revenue growth expected*

*... but no profits until 2014*




Source: analyst estimates.

*Recurring revenues from test analysis are the main source of income*

We assumed that the growth rate of device sales will accelerate, and that Vicor will sell about 130 devices in 2010, growing to 5,000 units in 2015, at $5,125 per unit ($26 million in device sales). We also assumed that each installed device will become increasingly used, from an average of 72 tests per device in 2010 to 300 in 2015. Thus, in 2015, we project an installed base of 14,345 devices, running a total of 4.3 million tests per year. At an average of $40 per test, this translates into $172 million in analysis revenues alone. These estimates are more conservative than what Vicor anticipates: the company's scenario envisages 750 tests per device per year (according to a company presentation). Applying 750 tests per year per device to our estimates would more than double the annual test revenue forecast to $430 million.

We also assumed that the gross margin will improve in the next 5 years from 15% reported in Q1-2010 (the only period with reported sales) to 20%, as the weight of data processing revenues exceeds that of device sales. We did not assume a higher gross margin because as soon as the company fully recovers its development costs for the PD2i platform, it will have to pay a 10% on all PD2i-related revenues to the technology inventor. Again, our estimates are more conservative than Vicor's published estimates of a 70% profit margin[iii] for analyzing diagnostic data (it is not clear what the "profit margin" refers to, but our estimates are definitely less optimistic).

Operating costs are expected to grow much more slowly than sales due to their semi-fixed nature. As such, we expect Vicor to reach an operating margin of 9.8% in 2015, with a net margin of 9.5%.

After 2015, we expect the revenue growth to slow down to 2% by 2021, as market reaches saturation.

## II.2. DCF MODEL

Main assumptions underlying the DCF model are shown below:

| **WACC calculation** | |
|---|---|
| Stock Price, $ | 0.62 |
| Shares Outstanding, 000s | 45,552.8 |
| Market cap, $ 000s | 28,242.8 |
| Book Value of Net Debt, $ 000s | 7,718.0 |
| Enterprise value, $ 000s | 35,960.8 |
| Beta | 1.00 |
| Market premium | 4.50% |
| Risk-free Rate | 3.08% |
| Cost of Equity | 7.6% |
| Long-term Equity Weight | 78.5% |
| Cost of Debt | 8.0% |
| Long-term Tax rate | 38.0% |
| Tax Effected Cost of Debt | 5.0% |
| Long-term Debt Weight | 21.5% |
| WACC | 7.0% |
| Terminal growth | 2.0% |
| Forward diluted shares, 000s | 90,000 |

Source: SEC filings, analyst estimates

We assumed the beta at 1, as betas available from public sources seem to be somewhat improbable: -0.19 reported by Yahoo! Finance and 0.16 by Reuters. We feel that the company's products will make it quite robust and resilient in difficult economic environments, warranting a relatively low beta, but given that the company still needs to break even, we don't think a beta less than 1 is justified.

We also assumed that the company will double its number of shares as it issues stock to raise additional funds to finance its growth. And we expect the company to begin paying income tax on its earnings in 2019.

| $ millions | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Revenue | 1.0 | 5.3 | 17.4 | 51.6 | 109.8 | 197.8 | 257.1 | 308.5 | 339.4 | 364.3 | 381.3 | 388.9 |
| Revenue growth | n/a | 444.4% | 224.7% | 197.2% | 112.9% | 80.0% | 30.0% | 20.0% | 10.0% | 7.3% | 4.7% | 2.0% |
| EBIT | -9.6 | -9.8 | -8.6 | -3.1 | 7.5 | 25.3 | 32.9 | 39.5 | 43.4 | 46.6 | 48.8 | 49.8 |
| EBIT margin | -975.2% | -182.8% | -49.4% | -6.1% | 6.9% | 12.8% | 12.8% | 12.8% | 12.8% | 12.8% | 12.8% | 12.8% |
| EBIT*(1-tax) | -9.6 | -9.8 | -8.6 | -3.1 | 7.5 | 25.3 | 32.9 | 24.5 | 26.9 | 28.9 | 30.3 | 30.9 |
| (+) Dep & Amort | 0.1 | 0.1 | 0.2 | 0.2 | 0.3 | 0.3 | 0.6 | 0.9 | 1.1 | 1.4 | 1.7 | 2.0 |
| (+) Stock-based compensation | 2.0 | 1.8 | 1.6 | 1.4 | 1.2 | 1.0 | 1.3 | 1.6 | 1.7 | 1.8 | 1.9 | 1.9 |
| (+) CapEx | -0.2 | -0.3 | -0.5 | -0.7 | -0.8 | -1.0 | -1.3 | -1.6 | -1.7 | -1.8 | -1.9 | -2.0 |
| (+) Decrease in non-cash working capital | 1.1 | -2.0 | -2.4 | -6.0 | -9.2 | -12.4 | -8.4 | -7.2 | -4.3 | -3.5 | -2.4 | -1.1 |
| = Free Cash Flow (FCF) | -6.5 | -10.1 | -9.7 | -8.2 | -1.1 | 13.2 | 25.1 | 18.1 | 23.7 | 26.8 | 29.5 | 31.7 |
| Terminal value | | | | | | | | | | | | 644.9 |
| **Discounted cash flow** | **-6.1** | **-8.8** | **-7.9** | **-6.2** | **-0.8** | **8.8** | **15.6** | **10.5** | **12.9** | **13.6** | **14.0** | **14.1** |
| **Discounted terminal value** | | | | | | | | | | | | **285.8** |

Source: analyst estimates

| DCF valuation | $ millions |
|---|---|
| DCF stream | 59.6 |
| DC terminal value | 285.8 |
| Total DC Enterprise Value | 345.4 |
| (Less) Net Debt | 7.7 |
| Equity Value | 337.7 |
| Price target, $ | **3.75** |

The sensitivity of our valuation model to WACC and terminal growth rates is shown below:

*Even with higher WACC and slower subsequent growth, there is upside potential*

| | WACC | | |
|---|---|---|---|
| **LT Growth ↓** | **5.0%** | **7.0%** | **9.0%** |
| 1.0% | 5.67 | 3.20 | 2.01 |
| 2.0% | 7.37 | **3.75** | 2.26 |
| 3.0% | 10.75 | 4.58 | 2.58 |

Taking the price per test of $25 instead of $40 produces a price target of $1.67, which still represents good upside potential.

# III. VICOR TECHNOLOGIES, INC.: COMPANY OVERVIEW

Vicor is a development-stage medical diagnostics company focusing on commercializing noninvasive diagnostic technology products based on its patented, proprietary point correlation dimension algorithm (the "PD2i® Algorithm").

## III.1. TECHNOLOGY

*Noninvasive diagnostics based on proprietary algorithm*

The PD2i® Algorithm provides a method for evaluating heart rate variability electrophysiological potentials (from electrocardiograms, or EKG/ECG) with high sensitivity and high specificity. The PD2i® Algorithm and software facilitate the ability to accurately risk stratify a specific target population to predict future pathological events, such as congestive heart failure, fatal cardiac arrhythmias (which are related to sudden cardiac death), imminent death from trauma and autonomic nervous system dysfunction. The PD2i® Algorithm and software represents a noninvasive monitoring technology that doctors can use as a new and accurate vital sign.

The PD2i® Algorithm is able to define the connection between the variation of heartbeat intervals and the heart's vulnerability to arrhythmogenesis. Vicor's analytical approach to quantifying these neuro-cardiac relationships utilizes the relatively new field of nonlinear dynamics.

The PD2i® Algorithm requires a maximum data collection window of only approximately 20 minutes (in some cases the collection window can be as short as 90 seconds) performed on a resting patient to produce the PD2i score. Elevated heart rates and stress testing are not required. At the physician's request, the patient may also perform three simple exercises which provide insight into the health of the patient's autonomic nervous system function.

*Conventional diagnostics are of limited use in predicting cardiac arrest or sudden cardiac death*

According to Vicor, conventional diagnostics are of limited use in predicting cardiac arrest or sudden cardiac death. Moreover, today's guidelines for implantable cardioverter-defibrillators (ICDs) are inadequate and lead to implantations in many people who don't need them. Studies show that at present, 20 ICDs must be implanted to save a single life. Furthermore, more than 70% of implanted ICDs will never have an appropriate firing while almost 80% of those who do die from sudden cardiac death would not even qualify for implantation under current criteria.

Vicor believes the PD2i® nonlinear algorithm should reduce both false positives and false negatives, thus providing better indications regarding who does and who does not need an ICD.

In September 2003 Vicor entered into a Royalty Agreement with Dr. James E. Skinner, the Vice President and Director of Research and Development, a Director of the company and developer of the technology, which provides for an ongoing royalty to be paid to Dr. Skinner of 10% of revenues received by Vicor from any activities that utilize the Analyzer. The royalty payments will commence after the company has recovered its development costs in full.

PRODUCTS

## III.2. PD2i ANALYZER™

The PD2i Analyzer™ displays and analyzes electrocardiographic ("ECG") information and measures heart rate variability ("HRV") in patients at rest and in response to controlled exercise and paced respiration.

The PD2i Analyzer™ consists of: (1) a private-label digital electrocardiograph device that incorporates automated blood pressure recording and (2) a laptop computer which utilizes proprietary collection software.

*Hardware is relatively simple and inexpensive*


Source: SEC filings.

The PD2i Analyzer™ accesses the internet and sends recorded electrocardiograph files to Vicor's remote server where the files are analyzed by the company's proprietary algorithm and software. The analyzed results are then provided to the physician in an electronic format than can be incorporated in an electronic health record (HER) and which the physician can use to bill both public and private insurers utilizing established Current Procedural Terminology Codes ("CPT Codes"). Vicor bills the physician monthly for the number of tests performed, thus enabling the company to realize recurring revenues from the repeated use of the PD2i Analyzer™, in addition to revenue realized from the sale of the device.

In December 2008, Vicor received the 510(k) marketing clearance from the FDA for PD2i Analyzer™ to measure heart rate variability, the use of which is physician determined.

In July, 2010, Vicor submitted a 510(k) premarket notification to the FDA for its PD2i® algorithm and software to secure a claim for identifying, in conjunction with patient's medical history and other tests, congestive heart failure patients at elevated risk of cardiac mortality. Vicor anticipates making various submissions to the FDA for marketing clearance for additional medical claims, such as sudden cardiac death, trauma and, possibly, the diagnosis of diseases related to autonomic nervous system dysfunction. We believe that additional FDA approvals will allow Vicor to intensify commercialization of its products and accelerate revenues.

### III.3. PD2i VS™ (VITAL SIGN)

PD2i *VS*™ is being developed in collaboration with the United States Army and is used to assess the severity of critically injured combat casualties to determine the need for immediate life saving intervention in those trauma victims who are at high risk of imminent death. The PD2i *VS*™ is anticipated to be also used for civilian triage and trauma emergency response.

*Technology allows to identify trauma patients who need urgent life saving intervention*

In January 2008, Vicor entered into an R&D Agreement mandated by Congress to reduce battlefield fatalities with the U.S. Army Institute of Surgical Research (USAISR) to explore ways to assess the severity of injury and probability of survival of critically injured combat casualties and critically ill civilian patients, using PD2i *VS*™. The PD2i *VS*™ has been tested through this collaboration against the best methodologies currently available. The results of several studies completed by the USAISR reveal the PD2i *VS*™ may be more predictive of the need for lifesaving intervention than all other compared diagnostics. For example, in Vicor's most recent study with USAISR, the PD2i *VS*™ examined 325 trauma injury victims, 20 of whom would later die of their injuries. The PD2i *VS*™ was able to correctly identify all 20. Moreover, of the 20 who died, conventional trauma triaging techniques had selected only six for lifesaving intervention in the field. This may suggest that current trauma triage methods are inadequate, which, in our opinion, increases the probability of FDA approval.

Additionally, at the request of the U.S. Army, Vicor is in the process of completing the programming necessary for the PD2i *VS*™ to operate as a continuous vital sign monitor. In this mode, the PD2i *VS*™ provides an initial result with three minutes of collected data and an updated status every minute thereafter. Each result is accompanied by an audible tone, and a green, yellow, or red light to indicate the patient's change in status and alert the emergency response team of a need for aggressive and immediate lifesaving intervention.

*Battlefield and civilian applications*

With more than 38 million emergency response calls annually in the United States alone, Vicor anticipates the PD2i *VS*™ will also prove invaluable by enabling paramedics to assign a level of severity to patients being transported to the emergency room. It is also expected to play an important role in helping medical personnel triage patients in the ER and hospital setting.

*Expecting FDA approval in 2010*

Vicor expects to submit findings of its PD2i *VS*™ research to the FDA to obtain an amendment to its existing 510(k) marketing approval in 2010. Marketing of the PD2i VS™ is anticipated shortly thereafter.

### III.4. PD2i CA™ (CARDIAC ANALYZER)

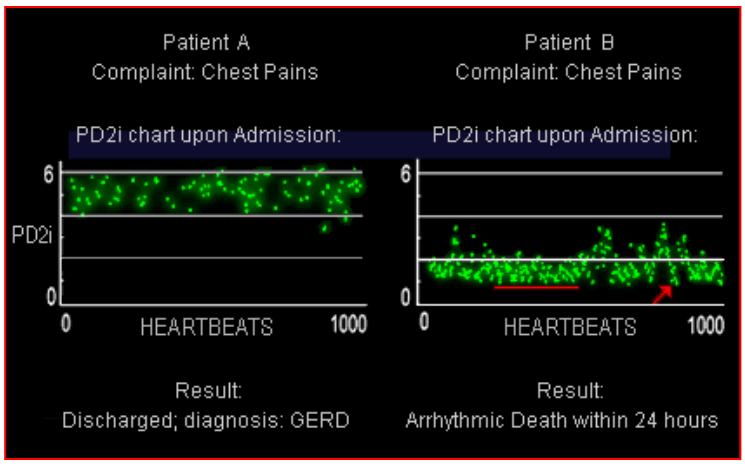
*In about 15 minutes, the PD2i CA™ may be able to identify patients who are at high risk of cardiac death within the upcoming six to twelve months*

The PD2i CA™ test helps accurately identify patients at elevated risk of cardiac mortality which includes arrhythmic death and pump failure death. These patients often require the use of implantable cardioverter-defibrillators (ICDs) or cardiac resynchronization therapy-defibrillators (CRT-D's). In about 15 minutes, the PD2i CA™ may be able to identify patients who are at high risk of cardiac death within the upcoming six to twelve months. There are several sensory-motor loops that normally work in competition to regulate heart rhythm. By analyzing ECG data, the PD2i CA™ can detect whether these sensory-motor loops are being overly-coordinated, which appears to be a clear indication of imminent risk of cardiac death.

*Allows to identify patients requiring ICDs with greater precision than existing technologies*

The PD2i® nonlinear algorithm has demonstrated a specificity of 83%, which could considerably reduce over-implantation compared with other triage methods and result in an immense savings in healthcare costs. According to Vicor, unlike competing diagnostics, the PD2i CA™ test is inexpensive, non-invasive, requires no active patient participation, is not derailed by irregular or ectopic heartbeats and can be performed on patients taking beta blockers commonly prescribed for coronary artery disease.

Below is an illustration of how PD2i® works.




Source: http://www.vicortech.com.

Both Patient A and Patient B presented at the E.R. with the identical complaint of chest pains. However, the disparity between their PD2i® traces, taken upon admission, suggests that these patients would have very different prognoses. Patient A (left) was safely discharged from the hospital after 24 hours with the diagnosis: GERD (heartburn), and did not die of sudden cardiac death during the year of follow-up. Patient B (above right) died in-hospital from sudden cardiac death less than 24 hours after admission. Patient B's PD2i® trace shows a sustained low-dimension (red underline) followed by a transient low-dimensional excursion (red arrow). The PD2i® patterns indicated by the red graphics show PD2i® values of ≤1.4 and are typical of what constitutes an abnormal PD2i® test, possibly indicating high risk of sudden cardiac death.

MUSIC Trial

In May 2010, Vicor announced the initial results of a study in which the PD2i® algorithm and software was used to analyze data from the Merte Subita en Insufficiencia Cardiaca (MUSIC) Trial. The conclusion of the University of Rochester researchers who conducted the study is that the PD2i® nonlinear algorithm and software is predictive of total mortality, cardiac death, and heart failure death in patients with left ventricular ejection fraction of less than or equal to 35%. With a P value of 0.004 the study results are highly statistically significant, with hazard ratio of ~2 for patients with PD2i value of ≤1.4.

The study was conducted under a collaborative agreement with the University of Rochester and the Catalan Institute of Cardiovascular Sciences in Barcelona. The goal of the study was to evaluate the ability of Vicor's PD2i® nonlinear algorithm to predict cardiac events in the 537 chronic heart failure patients enrolled in the MUSIC Trial; MUSIC Trial participants were followed for an average period of 44 months.

According to Wojciech Zareba, MD, PhD, the Principal Investigator at the University of Rochester, "These results are of major importance for risk stratifying heart failure patients who are eligible for therapy with an implantable cardioverter defibrillator (ICD) or cardiac resynchronization therapy with defibrillator (CRT-D). Testing heart failure patients using the PD2i® should enhance risk stratification and motivate physicians to implant these devices in ICD/CRT-D eligible patients with abnormal PD2i® test results."

*Expecting FDA approval in 2010*

Vicor believes the data obtained from analysis of ongoing trial results will be sufficient to support FDA 510(k) clearance for an application for cardiac mortality in 2010, with marketing to commence shortly thereafter.

### III.5. THERAPEUTICS

Besides its medical device business, Vicor has a pharmaceutical business, which however was frozen in 2003 to devote all corporate resources to the development of the PD2i® technology.

The pharmaceutical/therapeutics segment discovers and develops new drugs based on unique molecules derived from "altered-state" physiologies such as hibernation, REM sleep, and pregnancy. Vicor has succeeded in identifying several compounds which in early trials in non-hibernating animals show great promise to ameliorate stroke, protect cardiac tissue from heart attack damage, reduce blood pressure, suppress appetite and cancer cell growth, extend organ preservation time in transplant applications, ameliorate uremic toxicity in kidney failure and anesthesia recovery and more.

Vicor awaits additional funding to continue its therapeutics program. Recently, Vicor has been issued three international patents relating to the therapeutic platform and is expecting another patent to be issued by the end of 2010. More importantly, a U.S. patent has been allowed and is in process of being issued thus creating partnership opportunities with big pharma.

### III.6. ONGOING CLINICAL TRIALS

Vicor's technology is undergoing a number of trials for various medical indications. Each indication represents millions of patients in the United States alone.

*Multiple ongoing clinical trials with multimillion market potential*

Summary of clinical trials and market potential:

| Trial Name | Market Indication | Patient Market Size (Millions) |
|---|---|---|
| MUSIC | SCD | 15 |
| Normal Range Study | Diabetic Neuropathy | 18 |
| BIRST | Neuro-ICU | 0.5 |
| CASA | SCD-Student Athletes | US NCAA Population |
| USAISR | Trauma | Armed Forces Population |
| Kidney Failure | SCD-Dialysis | 2 |
| CARE-e | Cardiac Rehab | 15 |
| CARE-T | Cardiac Evaluation | 15 |
| UMMC Trauma | ICU/Mobile Triage | 38 |
| Mississippi Blood Bank | Internal Bleeding | 38 |
| MGH Trauma | Trauma Triage | 38 |

Source: http://www.vicortech.com.

### III.7. PATENTS

As of March 31, 2010, Vicor had four issued United States patents, three patents issued by foreign countries and two pending United States patent applications relating to its PD2i technology. Vicor has also filed patents with Australia, Brazil, Canada, China, European Patent Office, Hong Kong, India, Israel, Japan, Malaysia, Mexico, New Zealand, South Africa, South Korea, Taiwan, and Thailand. In addition, patents have been filed pursuant to the Eurasian Patent Convention and the Patent Cooperation Treaty.

### III.8. PLAN OF OPERATIONS

Vicor's plan of operations envisages the following steps:

- To increase sales of the PD2i Analyzer™ to physicians in the United States through the use of independent distributors and direct sales personnel.
- To raise additional capital with which to expand the sales and administrative infrastructure and fund ongoing operations until the operations generate positive cash flow (estimated 24-30 months).
- To complete various clinical trials and 510(k) submissions to secure additional marketing claims for the PD2i Analyzer™ to enhance and accelerate marketing efforts.
- To initiate international sales of the PD2i Analyzer™ and PD2i *VS*™, including securing CE Mark clearance, if required.

*Funding expected to be obtained soon*

Vicor has already filed the preliminary S1 prospectus with the SEC for an upcoming sale of equity. The amount has not been disclosed, but we believe it will be in the order of millions of dollars. This financing should enable Vicor to intensify its marketing activities and accelerate the commercialization of its products, especially when the company anticipates obtaining from the FDA approvals for two additional applications of its technology.

### III.9. MARKETING STRATEGY

*Sales through distributors who have market presence*

Vicor does not plan on establishing a large in-house sales force, but intends to primarily enter into co-marketing, sales and/or licensing agreements with medical device, biotechnology and pharmaceutical companies to take advantage of their marketing and sales expertise and to utilize their personnel.

Vicor believes that although significant, the United States market represents only a fraction of the total potential of worldwide market for its products. Therefore, Vicor also looks forward to marketing its products in Europe, primarily through distribution partners.

In January 2010, Vicor generated its first commercial sale of the PD2i Analyzer™ to a physician practice in South Carolina and entered into an exclusive distribution agreement with a medical products distribution company VF Medical, LLC.

PD2i Analyzer™ is expected to be sold ~~for $~~for $5,125 per unit and $40 per test.

### III.10. REIMBURSEMENT

*Medical insurers cover the costs of running tests*

Physicians are currently being reimbursed for the use of the PD2i Analyzer™ from insurance companies, Medicare and Medicaid. We believe this is a strong advantage as it significantly reduces the cost to patients and thus makes the technology accessible to a wider population.

## III.11. MANAGEMENT[iv]

### David H. Fater – President, Chief Executive Officer, Chief Financial Officer, Director

Mr. Fater joined the company in 2002. Mr. Fater was the founder and from January 1993 through present, has been the Chief executive officer of ALDA & Associates International, Inc., a business and financial consulting firm specializing in healthcare and life sciences. Prior to his founding ALDA, Mr. Fater served as a senior executive with three public healthcare companies, including two in which he led the initial public offering process (BMJ Medical Management, Inc. and Community Care of America), and one which he led to a NYSE listing and a $1 billion market capitalization (Coastal Physician Group, Inc.). Mr. Fater was employed by Coastal Physician Group from January 1993 to June 1995; Community Care of America from July 1995 to December 1996; and BMJ Medical from January 1997 to July 1999. From June 2000 through July 2001 Mr. Fater was the chief financial officer of Vector Medical Technologies, Inc. Prior to his corporate experience, Mr. Fater was a key international business advisor to senior management and boards of directors as a senior international partner during a 24-year career with Ernst & Young from January 1969 to December 1992. He also has extensive experience with numerous mergers and acquisition transactions. He holds a B.S. in Accounting from the University of North Carolina. He is a Certified Public Accountant in Georgia, Illinois, North Carolina and New York.

### Thomas J. Bohannon – Chief Accounting Officer

Mr. Bohannon was appointed as CAO on December 28, 2008. Mr. Bohannon has been in the accounting and financial field for more than 40 years. Mr. Bohannon worked as a senior manager at Ernst & Young in Atlanta from 1968 until 1978, where he specialized in financial and SEC reporting, before becoming the partner in charge of audit and review services for Pappadakis, Nelson & Bohannon from 1978-1991. Since 1992, he has focused on his own consulting practice, serving as the financial officer for a variety of companies in the Southeast United States.

### James E. Skinner, Ph.D. – Vice President Research and Science, Director

Dr. Skinner was Vicor's President from August 2000 through July 2002. Dr. Skinner has experience both as a scientist and manager of large research and development projects. From December 1969 to February 1993 Dr. Skinner was a Professor at Baylor College of Medicine in Houston, where he was the recipient of many research grants from the National Institutes of Health. During his tenure at Baylor College of Medicine, he was the principal investigator of a Program Project Grant that operated five laboratories and three core facilities. From March 1993 to July 1997 Dr. Skinner was the Associate Director of the Totts Gap Medical Research Laboratories, Inc. In August 1997 he founded the Delaware Water Gap Science Institute, a nonprofit medical research organization devoted to the development of medical devices and pharmaceuticals, and has served as its director since its inception. Dr. Skinner is a graduate of Pomona College and received his Ph.D. from the University of California at Los Angeles.

### Jerry M. Anchin, Ph.D. – Vice President Product Development and Physician Training, Director

Dr. Anchin has extensive experience in the biotechnology business sector. He has been actively involved in the fields of immunology, molecular biology, drug discovery and protein chemistry since 1978. Dr. Anchin worked in biotechnology at International Immunoassay Labs from September 1981 to July 1988 as head of assay development and manufacturing, where he was instrumental in designing a novel assay for the detection of the protein creatine kinase that is released as a result of acute myocardial infarction. He received two patents for his work in this area. Dr. Anchin then worked for Immuno Pharmaceuticals from August 1993 to February 1996 and Prism Pharmaceuticals from February 1996 to June 1998. Dr. Anchin was employed by Ciblex Pharmaceuticals from June 1998 through August 2000, where he became group leader of the drug discovery program involving novel small molecules that will be entering clinical trials for the prevention of asthma. He has been granted five patents in the field of immunoassay and drug discovery and has four patents pending. Dr. Anchin holds a B.A. in Cell Biology from University of California at Santa Barbara and received his Ph.D. in Immunology from Texas A&M University.

### Richard Cohen, Ph.D. - Chief Operating Officer

Dr. Cohen has 30 years of experience in worldwide operations and sourcing. COO of four health care companies, including two medical device companies.

### Daniel N. Weiss, M.D., F.A.C.C. – Chief Medical Officer

Dr. Weiss joined the company in April 2004. Dr. Weiss has extensive experience as a practicing cardiologist and electrophysiologist. He has been a partner in Florida Arrhythmia Consultants and had been a director of the Boca Raton Community Hospital EP Lab since 1994. He is also a consultant to Fortune 500 Medical Device companies including Medtronics, St. Jude Medical and Guidant. He has been a clinical investigator in the MADIT II (MultiCenter Automatic Defibrillator Implantation Trial) and SCDHeFT (Sudden Cardiac Death Heart Failure Trial) clinical trials. He is a cum laude graduate of Princeton University with a BSE in Electrical Engineering and Computer Science. He received his Medical Degree with Distinction in Research from the Mount Sinai School of Medicine where he also received the Nathan A. Setz Award for Research in Cardiovascular and Renal Disease.

### Lloyd C. Chesney – Chief Technology Officer

Mr. Chesney joined the company on January 1, 2010. Immediately prior to joining Vicor, he was Chief Technology Officer of MDVIP, a concierge physician organization providing personalized preventive medicine. During his tenure, he integrated MDTablet's electronic medical record into MDVIP's portal to provide bi-directional information exchange creating a dynamic patient health record, and integrated MDVIP's patient instant medical history into MDVIP's portal and MDTablet's electronic medical record for patient health risk assessments, which formed the foundation for individualized patient wellness plans. Previously, Mr. Chesney has served as CTO for Health Star Communications, a meeting logistics company, as well as CTO for EHealth Latin America, a facilitator of hospital-centric, web-based medical communication and education in Central and South America Cybear Inc., a then development-stage internet healthcare portal, CIO for Phymatrix Corp., a medical practice management company and CIO for the Palm Beach County Health Care District.

### Edward Wiesmeier, M.D. – Director

Mr. Wiesmeier joined the company in October 2004. During 1989-2006 Dr. Wiesmeier was a Clinical Professor of Obstetrics and Gynecology and Assistant Vice Chancellor for Student Development and Health at the UCLA School of Medicine. From 2008 to present, he has been a volunteer clinical professor of reproductive medicine at the University of California at San Diego. He serves as Chairman of Vicor's Scientific Advisory Board and Chair of the Compensation Committee.

### Frederick M. Hudson – Director

Mr. Hudson joined the company in July 2008. Mr. Hudson retired as a partner in charge of the healthcare audit practice for the Washington-Baltimore business unit of the accounting firm KPMG, LLP on January 1, 2006, after a 37-year career with the firm. He is a graduate of Loyola College and currently serves in a board capacity with the Board of Financial Administration of the Catholic Archdiocese of Baltimore, Board of Sponsors, Loyola College Sellinger School of Business and Management and the Board of Trustees of the Maryland Historical Society. He chairs the audit committee of the board of directors of Paradigm Management Services LLC (a provider of catastrophic care services), Woodhaven Holding Corporation, d/b/a Remedi Health Services (an institutional pharmacy service provider) and is a member of the audit and finance committee of the board of directors for GBMC Healthcare, Inc. and its affiliate, the Greater Baltimore Medical Center.

### Joseph C. Franchetti – Director

Mr. Franchetti joined the company in July 2008. He is a consultant, director and advisor to several healthcare/medical device companies in the cardiology/cardiovascular and life sciences arenas, including start-up companies. He now serves as vice-chairman of CVAC Health Systems Inc. and was president and CEO of Colin Medical Instruments Corp. (now Omron), a Japanese-owned worldwide leader for noninvasive blood pressure and physiological/vital signs monitoring and diagnosis. His executive experience also includes being co-founder and CEO of Bio-Chem Laboratory Systems Inc. and a corporate and international vice-president and general manager for Technicon (now Siemens) and Narco Scientific (now Respirionics). He is a graduate of the Wharton School of the University of Pennsylvania, a trustee emeritus of Southwest Research Institute of Texas, and a commissioned US Army Infantry Officer.

## III.12. SCIENTIFIC ADVISORY BOARD

Vicor has assembled a Scientific Advisory Board that provides Vicor with access to some of the brightest minds in the life sciences arena. Members, in addition to Vicor's own Drs. Anchin, Skinner, Weiss and Weismeier, include:

### Mark E. Josephson, M.D.

Chief of Cardiology at Beth Israel Deaconess Medical Center, a major patient care, research and teaching affiliate of Harvard Medical School; and the author of Clinical Cardiac Electrophysiology, the fundamental textbook in the field.

### Hein J. J. Wellens, M.D.

Professor and Chairman of the Department of Cardiology at Academisch Ziekenhuis Maastricht in Amsterdam, the Netherlands. He is a director of the Interuniversity Cardiology Institute of the Netherlands and is a member of the Netherlands Academy of Arts and Sciences. He also has an appointment of visiting lecturer at Harvard Medical School.

### Richard M. Luceri, M.D., F.A.C.C.

Recently retired director, Interventional Arrhythmia Center Holy Cross Hospital, Fort Lauderdale, FL as well as a clinical investigator in the MADIT II (MultiCenter Automatic Defibrillator Implantation Trial) and author SCDHeFT (Sudden Cardiac Death Heart Failure Trial).

### Robert G. Hauser, M.D., F.A.C.C., FHRS

Chairman of the Cardiovascular Services Division at Abbott Northwestern Hospital and former CEO of Cardiac Pacemakers, Inc., acquired by Guidant Corporation.

### Jonathan Kaplan, M.D., M.P.H.

Medical Director for Fidelis Care New York and formerly the corporate medical director for Excellus Blue Cross Blue Shield.

### David Chazanovitz

David Chazanovitz is the former chief executive officer of Cambridge Heart, Inc. (Vicor's only FDA-approved competitor).

### Edward F. Lundy, M.D., Ph.D.

Chief of Cardiothoracic Surgery at the Active International Cardiovascular Institute at Good Samaritan Hospital in Suffern, New York. In addition to his M.D. from the University of Michigan, Dr. Lundy also received a Ph.D. from that institution in physiology with a primary focus on altered-state physiologies such as hibernation.

### Jules T. Mitchel, M.B.A., Ph.D.

Founder of Target Health, Inc., a full-service contract research organization supporting all aspects of pharmaceutical drug and device development.

### Ariel D. Soffer, M.D., F.A.C.C

Chief of Cardiology at Jackson North Medical Center, one of the newest hospitals in the academically affiliated hospital system, Jackson Hospital.

### Hank Lubin, M.D.

Practicing physician with Hightstown Medical Associates, PA, (formerly affiliated with the University of Pennsylvania Health System) and currently a Clinical Associate Professor at The University of Pennsylvania School of Medicine.

### David Fertel, D.O.

Clinical Professor of Surgery at Michigan State University and a practicing board certified thoracic and cardiovascular surgeon in Michigan.

## III.13. RECENT EVENTS[v]

### Vicor submits 510(k) application to FDA for cardiac marketing claim | July 1, 2010

Vicor submitted a 510(k) premarket notification to the FDA for its PD2i® algorithm and software to secure a claim for identifying, in conjunction with patient's medical history and other tests, congestive heart failure patients at elevated risk of cardiac mortality. This filing is based on findings obtained from "Prognostic Significance of Point Correlation Dimension Algorithm (PD2i) in Chronic Heart Failure," a study conducted under a collaborative agreement with the University of Rochester and the Catalan Institute of Cardiovascular Sciences in Barcelona.

### Vicor announces results of PD2i® analysis of MUSIC trial data | May 19, 2010

Vicor announced the initial results of a study designed to analyze data from the Merte Subita en Insufficiencia Cardiaca (MUSIC) trial using its PD2i® algorithm and software.

The study, titled "Prognostic Significance of Point Correlation Dimension Algorithm (PD2i) in Chronic Heart Failure", was conducted under a collaborative agreement with the University of Rochester and the Catalan Institute of Cardiovascular Sciences in Barcelona. The goal of the study was to evaluate the ability of Vicor's PD2i® nonlinear algorithm to predict cardiac events in the 537 chronic heart failure patients enrolled in the MUSIC trial. MUSIC trial participants were followed for an average period of 44 months. The conclusion of the University of Rochester researchers who conducted the study is that the PD2i® nonlinear algorithm and software is predictive of total mortality, cardiac death, and heart failure death in patients with left ventricular ejection fraction of less than or equal to 35%. With a P value of 0.004, the study results are highly statistically significant.

Commenting on the study and its results, Wojciech Zareba, M.D. Ph.D. the Principal Investigator at the University of Rochester said, "These results are of major importance for risk stratifying heart failure patients who are eligible for therapy with an implantable cardioverter-defibrillator (ICD) or cardiac resynchronization therapy with defibrillator (CRT-D). Currently, only about 30-40% of heart failure patients eligible for this therapy receive devices. Testing heart failure patients using the PD2i® should enhance risk stratification and motivate physicians to implant these devices in ICD/CRT-D eligible patients with abnormal PD2i® test results."

### Vicor announces results of pilot study of its PD2i® nonlinear algorithm to detect acute hypovolemia | April 20, 2010

The goal of the pilot study was to test the ability of Vicor's PD2i® nonlinear algorithm to identify acute hypovolemia in blood donors as a preliminary step toward ascertaining whether it could be a useful noninvasive diagnostic for detecting blood loss from internal bleeding. All 18 participants in the pilot study were tested prior to donation to determine a baseline PD2i® value, and re-tested during and after collection. The average PD2i® value of participants prior to donation was 2.60; the average PD2i® value following donation was 1.80. With a P value of 0.001, the study results are highly statistically significant; this indicates a better than 99% probability that the results were not achieved randomly.

Mr. Fater indicated that "as this pilot study measures internal blood loss resulting from external blood donation, we anticipate further studies as part of our progress in commercializing a noninvasive diagnostic to detect acute hypovolemia."

## IV. SWOT

**STRENGTHS**

- High accuracy of technology
- Low cost of equipment
- Recurring revenues from test analysis
- No significant competition
- Provides an opportunity for the healthcare system to decrease costs
- Technology promises to save lives where conventional methods fail
- Sales have commenced
- Medical insurance covers Vicor's products

**WEAKNESSES**

- Little cash
- No proven sales record

**OPPORTUNITIES**

- Multiple uses of technology
- Potential market includes dozens of millions of patients
- Multiple trials underway
- Revenue is expected to ramp up quickly and reach tens of millions of dollars
- Major funding transaction planned (sale of equity)
- Pharmaceutical development in the pipeline

**THREATS**

- High debt
- Dilution potential
- Financing may be difficult to obtain
- Market acceptance may not meet expectations
- FDA may not approve additional uses

## V. RECENT FINANCIAL RESULTS

Vicor's financial statements reflect a development stage company, with minimal sales, net losses, negative working capital and equity deficit. Although sales commenced during Q1-2010, the company is not likely to register a net income in 2010 as operating expenses by far exceed reported revenues.

### V.1. INCOME STATEMENT

*First revenues booked in Q1-2010*

The company had not generated any revenues before Q1-2010, when it registered $100 thousand in revenue consisting primarily of fees from the sale of PD2i Analyzers™ to physicians and to the company's independent distributor (there was a minor revenue amount in 2006 but it was far too small to count). At the same time, operating expenses have been increasing, with the selling, general and administrative expenses accounting for 60% of total operating expenses during 2009 and 71% during Q1-2010. During Q1-2010, costs of sales amounted to $85 thousand, or a gross margin of 15%. The gross margin will probably increase in the future as the share of data processing revenues (from analyzing diagnostic data) increases, as there will be no manufacturing costs involved. In Q1-2010, data processing revenues accounted for just 12% of total revenues, but since the company's business model relies on this stream, it is logical to expect that it will represent the majority of sales in the future.

Research and development expenses accounted for 13% of total expenses in 2009 and decreased by 3% year-over-year. During Q1-2010, R&D accounted for 8% of expenses, having decreased by 21% year-over-year in dollar value, reflecting the difference in clinical trials conducted in 2010 compared to 2009.

During 2009, net loss shrank by 22% and amounted to $6.6 million, while during Q1-2010 it increased by 66% year-over-year and amounted to $2.4 million, driven mainly by a significant increase in SG&A expenses and interest. The increase in SG&A costs most likely reflects intensification in promotional and selling activities.

Selected income statement indicators

| $'000 | 2006 | 2007 | 2008 | 2009 |
|---|---|---|---|---|
| Revenues | 12 | 0 | 0 | 0 |
| Cost of sales | 0 | 0 | 0 | 0 |
| Research and development | 719 | 758 | 993 | 964 |
| Year-over-year growth | n/m | 5% | 31% | -3% |
| Selling, G&A expenses | 2,886 | 3,065 | 2,433 | 4,372 |
| Interest expense | 950 | 2,214 | 3,260 | 1,944 |
| Other operating expenses | 47 | 43 | 41 | 41 |
| Total operating expenses | 4,602 | 6,080 | 6,727 | 7,321 |
| Year-over-year growth | n/m | 32% | 11% | 9% |
| Operating loss | -4,580 | -6,068 | -6,727 | -7,321 |
| Net loss | -4,627 | -6,119 | -8,509 | -6,622 |
| EPS | -0.31 | -0.26 | -0.29 | -0.18 |

| $'000 | Q1-2009 | Q2-2009 | Q3-2009 | Q4-2009 | Q1-2010 |
|---|---|---|---|---|---|
| Revenues | 0 | 0 | 0 | 0 | 100 |
| Cost of sales | 0 | 0 | 0 | 0 | 85 |
| Research and development | 199 | 271 | 141 | 353 | 157 |
| Year-over-year growth | -18% | 29% | -25% | 0% | -21% |
| Selling, G&A expenses | 590 | 642 | 1,540 | 1,600 | 1,457 |
| Interest expense | 63 | 285 | 1,112 | 484 | 357 |
| Other operating expenses | 0 | 10 | 11 | 20 | 0 |
| Total operating expenses | 852 | 1,208 | 2,803 | 2,458 | 2,056 |
| Year-over-year growth | -26% | -65% | 274% | 78% | 141% |
| Operating loss | -852 | -1,208 | -2,804 | -2,457 | -1,956 |
| Net loss | -1,475 | -1,492 | -4,779 | 1,124 | -2,448 |
| EPS | -0.04 | -0.04 | -0.12 | 0.02 | -0.06 |

Source: company reports, analyst calculations.

## V.2. BALANCE SHEET

*Balance sheet remains quite weak*

The company's balance sheet is rather weak, with little cash, high debt and derivative liabilities, negative working capital and negative equity. As of March 31, 2010, cash accounted for one-third of assets and amounted to $308 thousand, being significantly less than total debt, which amounted to $1.9 million at the end of Q1-2010. Intellectual property and PPE together accounted for 35% of assets as of March 31, 2009. Shareholders' deficit amounted to almost $8 million at the end of Q1-2010 due to $56 million in accumulated losses, partially offset by paid-in capital.

Selected balance sheet items:

| $'000 | 31-Dec-09 | 31-Mar-10 |
|---|---|---|
| Cash | 544 | 308 |
| Other current assets | 74 | 213 |
| Total current assets | 618 | 521 |
| Intellectual property | 229 | 218 |
| Net property and equipment | 21 | 111 |
| Other non-current assets | 180 | 96 |
| Total Assets | 1,048 | 946 |
| Accounts payable and accrued expenses | 600 | 874 |
| Current debt | 460 | 660 |
| Due to related parties | 100 | 100 |
| Total current liabilities | 1,160 | 1,634 |
| Long-term debt | 1,251 | 1,172 |
| Derivative financial instruments | 4,414 | 5,135 |
| Accrued dividends | 833 | 959 |
| Total long-term liabilities | 6,498 | 7,266 |
| Equity | -6,610 | -7,954 |
| Total liabilities and equity | 1,048 | 946 |

Source: SEC filings.

Derivatives represent by far the largest liability item on the company's balance sheet - $5.1 million at the end of Q1-2010 – and consist of conversion options embedded in 8% Notes, 8% Subordinated Notes, Series B Preferred Stock and warrants to purchase common stock issued with preferred stock.

### LIQUIDITY

Net working capital deficit amounted to $1.1 million at the end of Q1-2010, almost doubling since the end of 2009 as current liabilities grew by $0.5 million and current assets declined by $0.1 million. Vicor recorded inventories and receivables on its books for the first time in Q1-2010, as it began selling its products. During Q2-2010, Vicor raised $840,000 from the sale of 8% subordinated notes and warrants[vi], and the company noted that these funds were deemed to be sufficient to finance operations through July 2010. This financing, in conjunction with the conversion of some convertible debt (see below for details) somewhat improves the balance sheet liquidity, but we believe the company will still need to raise additional funds to successfully implement its business plan.

### DEBT

The company's balance sheet is significantly leveraged as debt is significantly higher than the company's assets. As of March 31, 2010 current debt accounted for 34% of total debt and amounted to $660 thousand, while long-term debt accounted for 61%, the rest attributable to $100,000 payable to related parties. In the period from April 1 to May 10, 2010, the company issued $949 thousand worth of 8% subordinated notes and warrants to purchase 1.4 million shares of common stock.

Breakdown of debt:

| $'000 | 31-Mar-10 | Interest | Maturity |
|---|---|---|---|
| 2004 notes | 360 | 12% | month-to-month |
| Convertible Promissory note | 110 | 12% | month-to-month |
| Bank loans | 300 | 3.54%-4.83% | Q4-2010 |
| Total current debt | 660 | | |
| Due to related parties | 100 | | |
| Convertible notes | 560 | 8% | Q2-2011 |
| Subordinated convertible notes | 612 | 8% | Q4-2012 |
| Bank loans | 0 | | |
| Total long-term debt | 1,172 | | |
| Total debt | 1,932 | | |
| Debt issued subsequent to quarter end | 949 | 8% | |

Source: SEC filings.

Through May 11, 2010 the holders of all the outstanding 8% convertible notes had notified the company of their intent to convert all such notes held by them into 2,484,717 shares of the company's common stock (we believe this refers to both "Convertible notes" and "Subordinated convertible notes" in the table above").

### V.3. CASH FLOWS

The company's cash flows consist of cash outflows from operating activities, offset by inflows from financing activities (mainly issuance of debt), while investing activities are minimal.

Annual cash flow indicators:

| $'000 | 2006 | 2007 | 2008 | 2009 |
|---|---|---|---|---|
| CFO | -2,825 | -2,199 | -2,193 | -3,663 |
| CFI | -12 | 0 | 0 | -23 |
| CFF | 2,780 | 1,902 | 2,371 | 4,048 |
| Net Cash Flow | -57 | -297 | 178 | 362 |

Source: SEC filings.

Quarterly cash flow indicators:

| $'000 | Q1-2009 | Q2-2009 | Q3-2009 | Q4-2009 | Q1-2010 |
|---|---|---|---|---|---|
| CFO | -503 | -1,239 | -902 | -1,019 | -1,113 |
| CFI | 0 | 0 | -24 | 1 | -93 |
| CFF | 589 | 1,180 | 1,782 | 497 | 970 |
| Net Cash Flow | 86 | -59 | 856 | -521 | -236 |

Source: SEC filings.

## V.4. STOCK DILUTION

*Potential dilution is significant*

Most of the company's debt has conversion rights. The company has 45.6 million shares outstanding and approximately another 25 million of shares of common stock potentially issuable in connection to convertible preferred stock, convertible debt and options and warrants. However, excluding options and warrants, which are currently out of the money (based on average exercise prices), stock dilution is reduced to 7.8 million. In addition, in May 2010, the company issued a preliminary prospectus for a future issue of yet unspecified number of units of common stock and warrants.

Potential stock dilution summary:

| | Number / $ Value | Approximate Conversion/Exercise price on July 29, 2010 | Nr of common shares after conversion |
|---|---|---|---|
| Series A preferred stock | 157,592 | - | 157,592 |
| Series B preferred stock | 5,210,101 | - | 5,210,101 |
| 8% Subordinated convertible notes | $949,000 | $0.80* | 1,186,250* |
| 12% 2004 notes | $250,000 | $2.25 | 111,111 |
| 12% Convertible promissory note | $110,000 | $0.29** | 379,310 |
| Total | | | 7,044,364 |
| Options and warrants | 18,405,842 | $0.67 – 1.00 | 18,405,842 |
| **Total number of potentially issuable shares** | | | **25,450,206** |
| Current number of outstanding shares (as of May 25, 2010) | | | 45,552,834 |

* Assumed based on previous 8% financing terms.
** 50% below current market price.
Note: 8% debt has been excluded from calculations as we believe it has been converted and is thus reflected in the current number of outstanding shares. For conversion/exercise details of other debt, please see below.
Source: company reports.

### CONVERTIBLE DEBT

In the period from April 1, 2010 through May 10, 2010, the company issued $949 thousand worth of 8% subordinated convertible notes. There are also the 12% 2004 notes convertible into common stock at $2.25 per share and 12% promissory notes convertible at a price equal to 50% below the price at which common stock is first offered to the public in a registered equity offering.

As we mentioned above, the holders of all the remaining outstanding 8% notes (we assumed that this refers to all long-term 8% debt as of March 31) had notified the company of their intent to convert all such notes held by them into 2,484,717 shares of the company's common stock.

### OPTIONS AND WARRANTS

*... but options and warrants are currently out of the money*

According to the company's filings, as of March 31, 2010 the company had approximately 17 million warrants and options outstanding. In addition, between April 1 and May 10, 2010, the company issued 1.4 million warrants to purchase shares of common stock at an exercise price of $1.00 per share. With the recent market price of around $0.60 per share, all options and warrants are out of the money[vii].

Options and warrants outstanding:

| | Average Exercise price | Number outstanding |
|---|---|---|
| Warrants | $0.98 | 13,860,842 |
| Warrants (May 2010) | $1.00 | 1,380,000 |
| Stock options plan 2002 | $0.78 | 122,500 |
| Stock options plan 2008 | $0.67 | 3,042,500 |
| Total number | | 18,405,842 |

Source: company reports.

# VI. MARKET OVERVIEW

## VI.1. CARDIOVASCULAR DISEASES (CVDs)

Cardiovascular diseases (CVDs) are disorders of the heart and the circulatory system. Subgroups and prevalence estimates for the United States population are shown below.

*Dozens of millions people in the U.S. suffer from cardiovascular diseases*

CVD Prevalence in the U.S.:

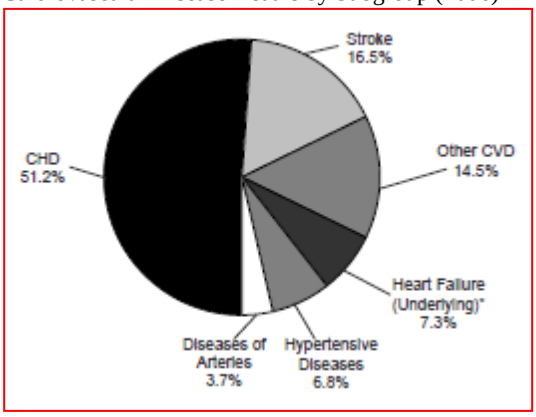
| | |
|---|---|
| **CVD** | **81,100,000** |
| Hypertension | 74,500,000 |
| CHD | 17,600,000 |
| Acute Myocardial Infarction (AMI) | 8,500,000 |
| Angina Pectoris | 10,200,000 |
| Stroke | 6,400,000 |
| Heart Failure | 5,800,000 |
| Congenital Heart Defects | 1,000,000 |
| Atrial Fibrillation | 2,200,000 |
| Peripheral Arterial Disease | 8,000,000 |

Source: http://www.nhlbi.nih.gov/resources/docs/cht-book.htm

*Cardiovascular diseases are the number one cause of death globally*

CVDs are the number one cause of death globally. According to most recent statistics by American Heart Association, in 2006, CVDs claimed 831,272 lives (final mortality) which represented 34% of all deaths in the United States.[viii] To compare: cancer, accidents, and AIDS deaths combined claimed 693,600 deaths.

Cardiovascular Disease Deaths by Subgroup (2006)




Source: http://www.nhlbi.nih.gov/resources/docs/cht-book.htm

Although in the United States, from 1996 to 2006, death rates from CVDs declined by 29.2% and the actual number of deaths declined by 12.9%[ix], today cardiovascular diseases are still claiming 17.1 million lives a year worldwide, and WHO estimates that by 2030, 23.6 million people will be dying annually from CVDs, mainly from heart disease and stroke.[x]

In 2010, CVDs are expected to cost the United States economy $324.1 billion in direct health care costs.

Projected economic cost of cardiovascular diseases, U.S., 2010

| $ billions | Total | Direct | Morbidity | Mortality |
|---|---|---|---|---|
| Total CVD | 485.6 | 324.1 | 39.1 | 122.4 |
| Heart disease | 311.1 | 189.5 | 24.0 | 97.6 |
| Coronary | 168.6 | 96.0 | 10.6 | 62.0 |
| Heart failure | 38.6 | 35.1 | n/a | 3.5 |
| Stroke | 71.2 | 48.2 | 7.0 | 16.0 |
| Hypertensive disease | 73.9 | 54.7 | 8.4 | 10.8 |

Source: http://www.nhlbi.nih.gov/resources/docs/cht-book.htm

*Huge economic cost*

We believe that, as the number of patients increases, health care expenditures will continue climbing. Vicor's technology could help reduce the costs of the healthcare system due to its early warning capability and high precision of diagnosis.

### VI.2. CONGESTIVE HEART FAILURE (CHF)

Congestive heart failure is a type of heart failure when the cardiac output is low (called "congestive heart failure" because the body becomes congested with fluid), i.e. the heart cannot pump enough blood to the body's other organs. This can result from any of the following conditions:

- narrowed arteries that supply blood to the heart muscle, which is referred to as coronary artery disease;
- past heart attack, or myocardial infarction, with scar tissue that interferes with the heart muscle's normal work;
- high blood pressure;
- heart valve disease due to past rheumatic fever or other causes;
- primary disease of the heart muscle itself, called cardiomyopathy;
- heart defects present at birth, which is referred to as congenital heart defects; and
- infection of the heart valves and/or heart muscle itself, which is referred to as endocarditis and/or myocarditis.

The "failing" heart continues working but not as efficiently as it should. People with congestive heart failure become short of breath and tired when they exert themselves.

According to National Heart, Lung and Blood Institute (NHLBI), CHF accounts for approximately 56,000 deaths per year in the U.S. alone[xi], while 400,000 new cases are diagnosed each year[xii].

Vicor reports that currently there are no readily available diagnostic tools that enable the easy identification of patients at elevated risk of pump failure death. The Wikipedia also mentions that "no system of diagnostic criteria has been agreed as the gold standard for heart failure"[xiii].

### VI.3. SUDDEN CARDIAC DEATH (SCD)[xiv]

SCD is a sudden, unexpected death caused by loss of heart function that is caused by arrhythmias (abnormal heart rhythms). SCD is the largest cause of natural death in the United States and accounts for approximately 325,000 deaths per year – more deaths are attributable to SCD than to lung cancer, breast cancer, or AIDS.[xv] It has been estimated that SCD claims more than 7 million lives per year worldwide.

Survival can be as high as 90% if treatment is initiated within the first few minutes after symptoms develop. The survival rate decreases by 7-10% each minute treatment is delayed.[xvi]

*Many patients who get ICDs will never need them*

*... while those who need them won't even qualify to get one*

Proper evaluation by a physician can prevent SCD through an implantable cardiac defibrillator (ICD) – a small device which detects heart rhythm disturbances and corrects them with electrical shocks. There are approximately 13 million people in the United States who currently meet the criteria of being at enough risk of sudden cardiac death to receive an insurance paid ICD. Unfortunately, only a small fraction of qualifying patients will get ICD – 30-40% of eligible heart failure patients, according to Vicor. What's worse, according to Vicor, almost 80% of those who die of SCD — who may well have been saved by an ICD — don't even meet the criteria for implantation; and 95% will die before they reach the hospital.[xvii]

Vicor believes that current methods do not offer adequate guidance for selecting ICD candidates and the company claims its technology can accurately identify those who are in need of ICDs. If the technology is proven and accepted, we believe it can conquer a large part of the market where correct identification of those needing ICDs will save lives, as well as costs for insurers and patients.

### VI.4. AUTONOMIC NERVOUS SYSTEM DYSFUNCTION

Autonomic Nervous System Dysfunction is among the least recognized and understood serious complications of diabetes. It often manifests itself as diabetic autonomic neuropathy (DAN), which impacts the entire autonomic nervous system. It causes substantial morbidity and increased mortality, particularly if cardiovascular autonomic neuropathy (CAN) is present. The American Diabetes Association recommends annual screening of more than 24 million diabetics for DAN. The most common non-invasive method of diagnosis is heart rate variability (HRV) testing in patients at rest and in response to three exercises.

Several HRV-measuring devices are now used as tools for evaluating patients for the presence of CAN. Many such devices have been designed with a focus on the diabetic population, but despite the growing incidence of diabetes, these devices have not yet been widely adopted by clinicians.

*Early diagnosis is needed to maximize chances of survival*

The diabetes market still represents a largely untapped market for technology able to facilitate objective identification of autonomic nervous system dysfunction and CAN. If not diagnosed prior to the manifestation of autonomic neuropathic symptoms, diabetics are at significantly greater risk of developing debilitating or fatal end-organ damage, which is more difficult and more expensive to treat than in its early stages.

In its statement, the American Diabetes Association recommends clinical screening for autonomic neuropathy among people with diabetes. However, as noted by Vicor, the HRV testing methods listed in its recommendations include linear time domain and frequency domain measures, but do not include the most technically advanced methods now available, such as wavelet transform and the non-linear Poincaré plots and point correlation dimension (PD2i) analyses. The latter methods offer advantages, such as reducing the data sample size required for analysis and lessening the effects of physiological artifacts. Moreover, the company believes that looking for autonomic symptoms is not an adequate approach to managing autonomic neuropathy, a patient's history and physical examination are ineffective for early detection of cardiac CAN, and the symptoms of autonomic neuropathy tend to occur when its development is advanced and difficult to treat. HRV testing may also facilitate differential diagnosis and the attribution of symptoms to autonomic dysfunction.

# VII. COMPETITION

## VII.1. CONGESTIVE HEART FAILURE

As we mentioned above, there is currently no readily available diagnostic tool that enable the easy identification of patients at elevated risk of pump failure death, according to Vicor.

## VII.2. SUDDEN CARDIAC DEATH

Noninvasive diagnostic tools for SCD are relatively new in the cardiac diagnostic field, thus the current market competition for this type of product is limited. Vicor considers Cambridge Heart, Inc. the major direct competitor for its PD2i Analyzer™. Cambridge Heart's products are the Heartwave System, CH 2000 Cardiac Stress Test System, and Micro-V Alternans Sensors, which have received 510(k) clearance from the FDA for sale in the United States, CE mark for sale in Europe and have been approved for sale by the Japanese Ministry of Health, Labor and Welfare. These products have been on the market since 2000.

*Competing technologies are expensive and/or less efficient*

Vicor believes that its PD2i Analyzer™ will deliver a more accurate prediction of SCD, is substantially less expensive and is more patient friendly than the CH 2000 Cardiac Stress Test System. According to Vicor, the competitive advantages of the PD2i Analyzer™ are as follows:

- it avoids risks associated with a cardiac stress test
- it can be performed on a resting patient in any environment
- it can be performed without specialized equipment
- costly electrodes are not required
- it is not affected by ectopic or irregular heartbeats
- it is not affected by common cardiac drugs, and
- there is no significant up-front equipment cost to the physician.

## VII.3. AUTONOMIC NERVOUS SYSTEM

In this field, Vicor considers Ansar Group's noninvasive real time digital monitor ANX 3.0 the major direct competitor of the PD2i Analyzer™. The ANX 3.0 monitor costs approximately $40,000. Vicor believes the PD2i Analyzer™ is more cost effective and offers a superior solution.

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[i] Source: http://www.diabetes.org/diabetes-basics/diabetes-statistics/.
[ii] Source: http://www.worlddiabetesfoundation.org/composite-35.htm.
[iii] See 8K SEC filing dated August 5, 2010, slide 22.
[iv] Source: SEC filings.
[v] Source: company press releases.
[vi] Vicor's Q1-2010 quarterly 10Q report mentions two amounts raised during the same period: $840,000 and $949,000, apparently referring to the same fundraising transaction. For the purposes of a more conservative approach, we assumed that the company received $840,000 in net proceeds by issuing $949,000 worth on debt.
[vii] Based on weighted average exercise price.
[viii] Source: http://www.americanheart.org/presenter.jhtml?identifier=4478
[ix] Source: http://www.americanheart.org/presenter.jhtml?identifier=4478
[x] Source: http://www.who.int/mediacentre/factsheets/fs317/en/index.html
[xi] Source: http://www.nhlbi.nih.gov/resources/docs/cht-book.htm.
[xii] Source: http://www.wrongdiagnosis.com/c/congestive_heart_failure/stats.htm.
[xiii] Source: http://en.wikipedia.org/wiki/Congestive_heart_failure.
[xiv] Source: company SEC filings, unless otherwise noted.
[xv] Source: http://emedicine.medscape.com/article/151907-overview.
[xvi] Source: http://www.americanheart.org/presenter.jhtml?identifier=4741.
[xvii] Source: http://www.vicortech.com/pd2i_ca.php.