

Executive Summary



Summary

Thor Power is currently seeking to raise approximately US\$5M of equity financing for its Phase two development, which among others will allow the Company to launch its electric power system ranged from 250 W to 25kW, with an initial product in the 2kW range, and establish its position in the market. Its multi-patented electric power system provides extraordinary efficiency in both generation & motoring, consuming over 50% less energy than an average system. It has applications in over 19 vertical market segments (USD16B+) including wind/hydro generation, heating, ventilation and air conditioning (HVAC), power tools, appliances & Electric Vehicles (EV's).

In a market where a more efficient use of the energy is a priority, Thor Power products' provide a solution, which can be used in multiple markets.

Thor Power® products' double the efficient use of electricity, permitting a paradigm shift in design.

The Company

Thor Power Corporation (the Company) was formed in 2002 in the United States as a Delaware "C" corporation by a group of entrepreneurs (see team section) with a view to develop and produce next generation engines. For over 5 years, the company has been working on product development at its laboratory facilities at Bethlehem PA. As of today the company has nine patents and patents-pending and additional patent applications are still under process.

In addition, the company has started discussions with the United States Department of Defense (DOD) units including: US Marine Corps; US Marine Corps prime contractor; and, US Army. The Company, further, is having discussions with large Original Equipment Manufacturers (OEM's) for power tools and HVAC. These discussions are focused on the use of the Company's product by DOD units, and licensing by the large OEM's.

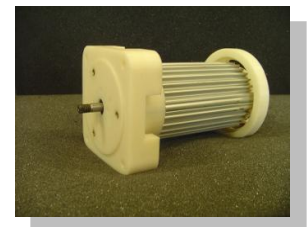
It is the intent of Thor Power® to focus its core competency on product design, development, engineering and marketing. It will contract manufacture and license the technology along with the right to manufacture to its customers. The Company will generate revenues through direct sales, government sales, grants and licensing with OE customers, generating revenues from royalties on sales of products incorporating the product.

To date, the company has raised over US\$1.5M including over \$400,000 convertible loan from Ben Franklin Technology Partners of Northeastern Pennsylvania.

The Product

The electric motor & generator market, a market of over US\$16B, still shows low efficiency rates and high internal energy consumption. Motors consume 60% of all the electricity produced in the world, and the Thor Power® product strategy has been purposely design to serve at least 80% of that market, covering wind & hydro-generators, power tools, medical devices, HVAC to electric vehicles.

The company's main system, the Trezium®, is a three phase brushless Alternating Current (BLAC) motor drive with a power unit that is slotless, sensorless with permanent magnet rotor, together with a power converter that can be used anywhere



in the world on land, sea or air. The system provides smooth variable speed over the complete rpm range from start-up to 30,000rpm.

A second product is the Grismir®, a power unit which can be used as either a motor or generator, without modification, from the end of the assembly line. The output to weight ratio is best in class.

The Trezium® system is scalable - the design principle/ techniques of the motor and controller system can extend to 25kW and beyond.

Patented Trezium® System Technology

Power Converter
(95% efficient)
100 – 267Vac, 50/60Hz
120 – 380Vdc

Permanent Magnet Motor or Generator
(90% efficient)
Today: 2.6 to 4.5hp

For comparable 0.3 to 25+ kW motors

The Trezium® System represents a new generation in power systems. Existing AC power systems are of a size that limits the miniaturization of the appliances and tools they power. They are also highly inefficient, consuming much of the electricity produced. They generate electromagnetic interference (“EMI”), vibrations, and other problems that hinder performance. The Trezium® System overcomes these limitations. Independent tests of the Company’s controller and motor demonstrate 95% and 90% efficiency, respectively, compared to mid-60% levels in existing power systems. Independent testing shows, that in addition to substantially superior power efficiency, the Trezium® System is five times more durable and ten times more reliable than conventional AC motor systems of the same power range today.

Figure 1: Trezium® system

The Trezium® system power converter consists of AC/DC converter and DC/AC inverter. The front-end AC/DC converter is a boost converter, incorporating Power Factor Correction (PFC). It converts the input AC line voltage to stable 400Vdc bus which feeds to three-phase DC/AC inverter. This circuit can operate from 100Vac to a maximum of 264Vac (nominal 120Vac to 240Vac). With suitable modifications to the input protection devices, DC can also be supplied to the drive. The DC input should be in the range of 100Vdc to 400Vdc.

The power section of the inverter is an intelligent Power Module utilizing 5th generation Insulated-gate Bipolar Transistors (IGBTs). The power module also contains integrated IGBT gate driver, short circuit protection and over temperature protection.

The inverter power module is controlled from an ASIC that provides the basis for the Sensor-less FOC (Field Oriented Control) of the motor. This IC provides open-loop startup of the motor to approximately 3,000rpm. From 3,000rpm to the rated speed, a controlled speed ramp is provided. Above the minimum speed, the FOC algorithm adjusts the drive to the motor in order to optimize the power output. Speed is regulated with a closed loop speed control algorithm that keeps the speed nearly constant from no-load to full-load. The sinusoidal drive voltages are generated using a Space Vector PWM operating at 12 kHz. At 30,000rpm the drive generates a three-phase 500Hz output at approximately 200Vac line to line. A limited amount of the mechanical energy from the motor can be regenerated into the DC buss upon deceleration. This ASIC also monitors fault conditions such as over/under voltage of the DC buss, loss of a motor phase, improper startup, over-current, over-speed, and other operating parameters.

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The Trezium® System's smaller size, lighter weight, and improved performance open up a breadth of new and advanced applications in virtually every industry that relies on electric motors. At the present time, 60% of US electricity consumption is consumed by conventional motors, of which 80% operate at 7.5kW and lower. The Trezium® System offers the best alternative that manufacturers of AC motor products have to both miniaturize and/or improve efficiency.

The Trezium® System specifications have been tested by the Energy Research Center at Lehigh University, confirming every single aspect of the system. The tests were conducted in conformance with the Institute of Electrical and Electronics Engineers, Inc (IEEE) standard definitions for efficiency and power factor. The IEEE is world's leading professional association for the advancement of technology.

Target Market

The Company has identified for its Phase two, 3 different segments, which represent the greatest potential for its products, where the need for a highly efficient, small and cost effective power system in the 250W-25kW power range is virtually limitless.

- The Replacement (retro-fit) market, within the US\$6.7B brushed DC market, represented a market value of over US\$490M in 2007, with double digit growth rates per year.
- New Markets applications, autonomous systems, micro-generators such as micro wind and hydro, electric vehicles (EV), aerospace and military devices among others. These new markets represent an estimated figure of US\$11B per year according to Freedonia
- The Medical and Industrial automation market creates opportunities through economies of scale and due to the high reliability and efficiency of the company's system

The chief market driver will be the need to reduce energy costs and the desire to reduce environmental impacts. Thor Power product portfolio addresses both sides of the energy equation – electricity generation & electricity use/management, positioning it in an advantageous situation. The Trezium® Power Device & Electronic Systems will be able to compete in any vertical market segment that uses electric AC or DC motors ranging initially in output size between 250W – 25kW and in a Phase three up to 50kW.

At present, Thor Power counts with at least 5 competitive advantages over its competitors:

1. Thor Power's patents and expected future patents;
2. Entrenched producers' dedication to 100 year old technology and associated fixed investment Barriers to Entry;
3. Thor Power's product scalability capitalizing on modular design;
4. Thor Power's systems approach to power rather than mechanical or electronic focus only;
5. Thor Power's ability to achieve speed to market due to synergies across product design.

These competitive advantages delay the entrant of real competition into the market for at least 2 to 3 years, giving the company enough time to position itself in the market. The Company has, however, assumed in its financials a small market penetration of 5% within the next 4 years of the addressable market due to the entrenched position of current market leaders.

Business Model

The company has developed a 3 phase model. Having completed phase one, it is now focusing on the development of phase two which will focus mostly on the introduction of the products to the market and work on new applications to increase profitability.

Routes to Market

The routes to market will be direct sales to large government agencies by teaming with those agencies prime contractors. The Company has already moved in this direction through the supplier route by working with companies like Electron Energy Corporation and API Technologies, who today are prime contractors.

In short, Thor Power will license to large manufacturers, sell to small manufacturers with production off-take from its licensees, and sell “loose Units” over the internet to new applications, targeting markets such as the electric vehicle and microgeneration due to the competitive advantage of the system such as half the weight and 15% higher efficiency than the best alternative.

In addition, Thor Power has established a Minority Business Enterprise (MBE), FETe Energy in the USA to capitalize on government funding of energy projects in urban areas, including micro wind energy.

Profitability

The Company is in the process to produce a batch of 30 generators for market sale. This small number will allow the company to introduce its product to the market, manufacturers, and final consumers and continue applications’ development.

After the product has been tested in the market, the company aims to create multiple partnerships to develop its multiple system uses. The company estimates over 18 month to complete products development and market penetration, estimating first profits for last quarter of 2012. From there on base estimations assumed the capture of a 5% market share in 4 years with a company EBITDA over US\$20M. The company has already entered into negotiations with some manufacturers in the power tool industry.

Team & Experience:

- ❖ **David Bonner**, MA, Chief Executive & Founder (30+ yrs, Massey Ferguson, Perkins Engines, Atlas Copco; Start-ups, Turnarounds, M&A in EU, Far East, North America; 20X ROI in US, China, Germany).
- ❖ **Robert H. Bender**, Director, Government Relations (25+ yrs in government affairs; Member of US Naval Academy Association Board of Trustees and President of the USS Pennsylvania Foundation).
- ❖ **Gary Busch**, MBA, Chief Procurement Advisor (25+ yrs; strong SCM & Total Cost Management (TCM); Lean and Six Sigma; in Honda of America, International Navistar, Honeywell Aerospace and Shiloh Industries).
- ❖ **Colleen Krcelich**, C.P.A., Chief Financial Officer (20+ yrs; serial start-up tax & control).
- ❖ **Herbert S. Meeker**, Esq., General Counsel (30+ yrs; Wall St.; M&A).
- ❖ **Maite Pina**, MSc, Strategic Advisor (10+yrs; Energy and Finance).
- ❖ **Ernest Willson**, ME PE, Chief Project Engineer (40 yrs, Consulting Engineer with Chinook Energy, Worley Parsons & URI, Washington Group International, Raytheon, United Technologies, MIT & U.S. Army; managing engineering, development and marketing of engineered products).
- ❖ **Dr. Aidong Xu**, PhD, Chief Technology Advisor (20+ yrs; Power Electronics - consultancy, Emerson Electric).

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Investment Process

Maite Pina has been retained by Thor Power[®] Corporation as strategic advisor and the lead equity arranger in this transaction. The Information Memorandum will be available from the first week of December 2010. Interested parties should contact Maite Pina for further information regarding this opportunity at mpina@thor-power.com or on +44 (0)7824 814 841

WARNING

This communication is not a prospectus or offer. It is being issued on a limited basis by Thor Power[®]. Maite Pina has been appointed as the strategy executive and lead equity arranger in this transaction.

This communication is directed exclusively at:

- Persons having professional experience in matters relating to investments and that any investment or investment activity to which it relates is available only to such persons or will be engaged in only with such persons; or
- Companies with called up share capital or net assets of either (a) in the case of a company with more than 20 members, not less than £500,000 or (b) in the case of any other body corporate, not less than £5 million.

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The investment opportunity is a start-up pre IPO venture, considered to be a high risk investment, and investors may lose all of the capital which they invest. Consequently, this investment summary is only aimed at persons with experience of investment into similar high risk opportunities that are able to understand the risks and bear financial losses;

To maximize returns, investors may need to hold their investments on a long-term basis. As a consequence the opportunity may not be suitable for short-term investment and investors should not invest if they may need to realize their investment prematurely.

There is no established secondary market for the sale of equity of Thor Power[®] and it may prove difficult to dispose of shares or to sell them at a particular price.

No representation is or can be made as to the future performance of the company, or that the company will or can receive the level of returns illustrated in this investment summary. This investment summary does not constitute advice, and all prospective Investors are strongly recommended to seek their own professional advice on the suitability of this investment.