NEF ADVISORS, LLC

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EQUITY RESEARCH

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FREEPOWER (UK)

Private, IPO 2012

One Hot Renewable Energy Company!

Freepower has designed, built and is in commercial production of a patent protected family of Organic Rankine Cycle (ORC) turbine products that use low grade waste heat from any source; industrial, solar CSP, or other, to generate clean electricity efficiently, reliably and economically. They have targeted the smaller electrical production niche (<500 kW). Due to superior design, the Freepower products have a low cost, small footprint, high reliability and efficiency and are virtually without direct competition.

Highlights

- Revenues come from niche FP85 and FP120 products
- One of the Guardian newspaper's Cleantech 100 companies
- Installed selling price vs competition of only just over £2 per watt
- Delivered equipment includes a large ongoing military order
- Computer aided design and manufacturing (CADCAM)
- Potential waste heat market for hundreds of thousands of ORC's
- Freepower's products are moved on a single fork-liftable skid
- Nearest competitor comes as a multiple package
- Multiple waste heat sources including; municipal solid waste, cogeneration, industry, landfill gas, biogas, anaerobic digestion, biomass, solar thermal, brick and ceramic kilns, glass manufacture, foundries, cement, food industries, chemical processes, high temperature thermal oxidizers and pharmaceuticals
- Feed-in-tariffs, grants, regional incentives, and other public subsidies are drivers additional to the economics arguments
- Smallest integrated, flexible heat recovery system for its output
- Useful for either on-grid or off-grid, "island" mode applications
- Designed for volume production
- Working fluids meet Kyoto and Govt. environmental approvals
- Expanding its global presence
- Reliability with annual service is at least 10 years
- Least disruptive installation process plus plug and play
- Ideal for unattended sites and web based monitoring
- The only ORC designed completely around its transfer fluid
- 90% of 1.2 MW gas generators and 1 MW flares can generate extra revenues with a Freepower ORC turbine
- An FP120 generates 430 tons of carbon abatement annually

2012 IPO Price Target	£4.00
Last Raise Price	£2.15
1 Year ROR	45%
Market Capitalization:	£43 million
Fiscal Year End:	May 31st
Shares Outstanding:	20,166,661
Sedol number	B3C8DHO
Dividends	None
Projected margins	35%
2010 Revenues	£3.9 million
2011 Revenues Expected	£20.7 million
2012 Revenues Expected	£47.5 million

Incorporated in the UK

Sector: Sustainability, Renewable Energy

FREEPOWER

The Guardian / Library House CleanTech 100

I. Executive Summary

Freepower Ltd was founded in 2001 with the fast growing waste heat market in mind. They developed an ORC turbine that generates electricity by harnessing this widely available, free, wasted heat. The FP85 and FP120 were the products of a design principal that first chose the best ORC fluid, the heat tolerant, simple chemistry, low boiling point hexane. They then optimized all the components around the fluid resulting in the most compact, economic, efficient, power generation products in their class. They generate from 6 kW to 250 kW and to date have products standardized to fit specific industrial niches; the FP6, FP10, FP85, FP100 and FP120 models with plans for FP60, FP250 and FP500 models.

The ORC turbine was invented in the 19th century by William John Macquorn Rankine, a polymath scientist who also contributed to the steam engine. The ORC has been used widely for well over a hundred years. In common with many technologies that are at the core of renewable energy configurations, it's very old. The Rankine cycle is responsible for 80% of all electrical generation by all the fossil fuel methods, including nuclear, for the very large generating capacities 1MW and above. The reference to organic in "Organic Rankine" concerns the nature of the working fluid circulating constantly inside a circuit, like a reversed refrigerator. Today, new technologies for manufacturing smaller turbines combined with a greater need to take advantage of the huge quantities of wasted heat have led to products which occupy the smaller capacity niches below 1 MW.

The world is full of wasted heat. In coal fired electricity generation alone, approximately 40% of the planet's electrical power comes from this fossil fuel. It is burned at about 35% - 40% efficiency. The other 65% of the energy in the coal is wasted as lost heat; this is also true of petrol/diesel engines. It has been historically very difficult to tap this source of lost energy and so the power has been generally wasted. On top of this, electrical distribution loses approximately 10% more as it generates heat in transmission lines. Consumers also leave lights and power systems running and "on" 24 hours a day. A growing awareness of such wasted value is beginning to forge change but it remains the case that the world is full of wasted heat and power as well as solar heat. This heat energy is available, huge, untapped and free.

Heat comes from banal as well as exotic sources. Some sources are ordinary such as ovens and kilns, chemical or manufacturing processes. They are exotic when considering that globally there are thousands of cremation locations where significant heat is generated from the use of natural gas. Even pizza ovens have energy that could easily be used to run the pizza restaurant or be shared with the local neighborhood. Much of this heat is very high temperature fitting perfectly with the rationale of an ORC turbine which can utilize high temperatures very efficiently. Most other ORC products on the market which address lower temperatures are very expensive, large and inefficient. Available solar heat is almost incalculable and can be generated in sunshine at almost any desired temperature almost anywhere.

Governments are encouraging the use of clean energy with feed-in-tariffs (FIT's) and other subsidies. Utilities are looking for methods to increase green generation and to help smooth out the demand and supply spikes in the electrical grid. Freepower's turbines are competent agents in such a situation. In fact there are hundreds of thousands of possible locations where modular, small footprint generators like Freepower's FP120 could add value. They are ideal for remote installations far from any grid. The small footprint, high efficiency and reliable performance make this turbine an excellent option. The fact that the military are already customers after doing their own due diligence on competing products underlines the core competencies of the FP family of products. Almost every existing generating plant has waste heat that can now be turned into revenues with no extra fuel and a very short payback.

Investment Thesis

As a growing company, Freepower Ltd., planned to raise £2 million in 2007 to invest in productive capacity. The offering was interrupted by the 2008 market crash and the loss of investor appetite for risk. Essential equipment to increase production capacity could not be purchased and so the company has a current capacity of just 2 machines per month. With just a small investment, the company can manufacture up to 20 FP ORC's per month, add more teams, and start to increase production to meet the market demand. At a rate of 3 machines per month the company is profitable.

Freepower's ORC turbines are modular and capable of volume production. They add revenues to larger existing generators or to heat wasters who until now had no short -payback method of recuperating that energy. Where there are incentives for renewable energy, payback periods can be as low as 2 years, but in any case no longer than 4 years. An investment made in Freepower now will triple revenues, put the company and its highly competent management into the black and help obtain economies of scale leading to even higher margins prior to an IPO exit within 18 months. Any investment designed to help Freepower over its hump stands a clear and visible attractive ROI that we conservatively calculate at 45% to an IPO at £4.00.

Markets

The market that Freepower targets is the sub 500 kilowatt market because there are no serious competing products in that space and plenty of demand. The heat energy which fuels the ORC comes from myriad sources; geothermal, biomass, industrial, hot exhausts, ovens, furnaces, flue gas condensation, fermentation, compressors, power cycle compressors, concentrated solar thermal power etc. The family of FP products can adapt to generation below 500kW, an underserved market area. The company's FP products are correspondingly at the high end of the quality scale. Customers value electrical reliability, off grid or offsetting grid costs by its mobile installation capability, small footprint and efficiency.

Electricity prices are increasing with many geographies which are locked into a higher pricing regime such as island communities everywhere, as well as New York, California, Japan and Italy. Electrical costs are set to rise as coal consumption has to be cleaned up and as fuels become more expensive with lower supply and higher demand. Talk of peak oil and now peak coal, confirmed by higher energy commodity prices underpins such thinking. The following is a list of addressable market opportunities for the Freepower ORC turbine:

Waste to Energy

This is the direction taken in many of the markets mentioned here. Starting with markets where Freepower already enjoys revenues. Creating heat from waste is a major theme. Pyrolysis + ORC have a natural partnership making short work of garbage and providing a huge potential market. Other methods of disposing of garbage which could easily still involve an ORC are using plasma torches, where syngas (H2 CO) is conveniently one of only two bi-products of the garbage disposal process using high temperature plasmas (5,000 – 10,000°C) to literally dematerialize anything it comes into contact with. Pyrolysis is a thermo chemical method that heats up biomass or municipal solid waste to a high enough temperature that it dematerializes and gives rise to a flammable gas, often termed Syngas, a source of heat for an ORC system.

Landfill Gas Generation is one of the major incentivized markets that could employ Freepower's ORC turbines in the field at this point. They generate large amounts of electricity using the often "sour" methane like gas that arises from landfills as all the organic materials slowly decompose. Landfill gas provides a ¼ ROC in the UK. The UK feed-in-tariff is 15 – 16 pence per kilowatt, much lower than the Italian EUR 28 cents. A 10 MW installed generator can significantly add to its revenues with a few FP120 modules, without any increase in fuel cost, merely by exploiting the otherwise wasted heat.

Anaerobic Digestion (AD) is the process of decomposition of biodegradable, typically vegetable and animal waste, farm waste, manure and cereal and corn, food production waste, supermarkets, domestic waste, and sewage. Traditional landfill companies are converting to AD and Biomass as a better alternative to garnering

piped methane from rubbish pits. Germany is currently the most advanced European installer of AD equipment to replace landfill as well as farming, where there are currently over 1,500 1MW installations.

Biomass is the mass of vegetative fuel that grows each year from sawgrass to wood to algae, anything natural that can be burned to create heat in boilers or pyrolised. This is a great market for Freepower because a supermarket can recycle all its waste back to its headquarters in normally empty trucks, where a pyrolysis system creates heat from which the ORC can generate power for the grid, solve the supermarket's own garbage problem and cut waste disposal costs. This is also a good solution for remote and off grid situations, such as remote hotels, or a ship. With a supply of garbage, or biomass fuel they can be self sustaining in this way. If wood coppicing (a method for cutting trees so that new shoots annually grow from the roots) is employed there are double ROC's and 40% for wasted wood use in the UK. Anaerobic digestion gases, which are sourced from careful fermentation of manure and other waste liquids can be burned, create heat and run the turbine. Anaerobic digestion has a double ROC allowance.

Military. The US military had done research on the availability of a method to use heat to generate power for everything from remote military units, to ships etc. No other system matched Freepower's mobility, small footprint, efficiency and cost resulting in a "no brainer" decision. There is already an initial FP85 being commissioned after delivery with a further 11 units to follow, the initial batch of a much larger order for 90 turbines. Little is more bankable. The military appreciate the energy security offered by generating their own electricity on base from waste as well as water conservation. Additionally military thinkers around the world are embracing cleantech. They see huge global security issues caused by climate change, not to mention the convenience of being freed from the oil umbilical. They also see this as an added protection against potential terrorist insurgence onto bases by avoiding the need for garbage collection.

Biodiesel. Freepower have their own electricity generation test station in the factory where a new machine goes through its paces using heat from the combustion of biodiesel. The Company's facility draws only 20 kW h of electricity and so consumes only 16% of the production of one FP120 machine. They have supplied over 2,500 hours of electricity to the local grid and this proportion will increase with increased production and testing. The

company intends to install generating facilities in the future to take advantage of Feed-in-tariffs (FIT's) and other subsidies in the US and the EU. They have a requirement in the factory currently for 20 kW of electricity every hour, and this means they can sell 100 kW into the local grid. Freepower have put 2,500 hours of electricity into their local grid and intend to develop a self sustaining business in many geographic locations that benefit from high electricity prices combined with the most generous subsidies. Biodiesel benefits from being carbon neutral since the carbon released in combustion is merely reabsorbed by growing oil producing plants during the following year's growing season. In the UK biodiesel, like corn ethanol, has been the source of a controversy where if food producing agricultural land is used, and food prices are forced to climb, then there should be no sustainability label for fuel crops. This caused UK subsidies for biodiesel to be cut.

Crematoria. Huge amounts of heat are generated by, of all things, Crematoriums. These morbid centers utilize natural gas to burn away the last remnants of our dearly beloved with no thought to the sustainability perspective. Increasingly crematoria are under pressure to improve their act by reducing mercury emissions by 2012 bringing major changes in any case. 78% of UK crematoria are owned by cash strapped local authorities eager to find a new use for the wasted heat. ROC's are available as well which provide a 6 – 7 year payback. Crematoria in Germany and France run 24 hours a day but only 8 in the UK.

Crematoria	
UK	320
France	139
Germany	146
Spain	132
Other EU	68
EU Total	**805**
USA & Canada	2,663
China	1,702
Japan	1,548
Thailand	2,077
Other Asian	267
Asian Total	**5,594**
Total	**9,062**

Concentrated Solar Thermal (CSP/CST) is currently represented mostly by large installations of parabolic troughs in sunny places like the Mojave Desert where almost 400 megawatts are generated hourly in 360 days of sunlight per year. Parabolic troughs concentrate the sunlight landing on them onto a receiver or tube with oil or molten salt inside it which carries the heat away to the power bloc. There is no reason why an ORC turbine cannot be that power bloc. CSP is currently growing at over 40% per year globally and the scope of this market to use ORC's is getting stronger all the time.

Combined Heat and Power (CHP). CHP equipment was developed to provide large amounts of heat and a small proportion of electricity. With escalating electricity costs around the world, methods of increasing the electrical output of CHP applications are being sought. By simply adding a Freepower unit into the equipment exhaust stream makes this possible. There are over 500,000 CHP installations in the UK alone, with most supermarkets and shopping malls using CHP equipment.

Industrial. This is a very large market and includes; brick and ceramic kilns, steelmaking, glass manufacture, foundries, cement, food industries, high temperature thermal oxidizers, chemical and pharmaceuticals processes. Manufacturing plants around the world represent thousands of heat sources that can be used to generate electricity using an ORC turbine. Making use of this otherwise wasted energy saves energy and increases electricity and revenues generated. From steelmaking to pizza ovens, high temperature heat energy sources are available that are still hardly used. One of the best applications for the turbine is as a modular combined heat and power (CHP) unit. With only minor adjustments the system can be plugged into a heat source with “plug and play” convenience. Most other systems require extensive matching to any heat source in order to find their optimal performance.

Municipal. Use of municipal sources of heat for electrical generation is a major area of potential orders for Freepower. Needless to say, penetrating this market is difficult until the benefits actually save money in practice. Few municipalities have the free cash to invest in any new ways of doing things, but once the ice is broken, I expect municipalities and local authorities to be among the largest purchasers.

Remote Installations. All the required electricity needed for a remote community, hotel, hospital, military base or house can be generated with as much reliability as offered by the grid, using an ORC turbine system. Ideal locations would include Caribbean Hotels and resorts.

Disaster Relief. One of the first things needed on the site of a disaster, is power, and the ability to handle the large amounts of waste that are usually available. Mobilizing power to a disaster location is lot easier if there is a conveniently sized system that can be plugged in easily to the new network. Freepower’s combination of small size and maneuverability, air portability, light weight, rapid deployment capability and reliability, make it a leading waste to energy option for relief agency’s to have ready to use.

Carbon Reduction programs. There is a big push around the world to reduce carbon emission levels and offset further carbon emission from such things as coal power stations and by industry making efficiency improvements across a range of areas. Where there is a source of wasted heat, by installing Freepower equipment all users put significant and immediate Carbon Reduction into their sustainability programs. The Carbon Trust validated Freepower’s FP120 turbine to have a carbon abatement of 430 tons of carbon annually running at 95% capacity.

The Technology

Most of the world’s electricity is currently generated by coal power stations or diesel and steam engines running off heat generated by a fossil fuel. Organic Rankine Cycle (ORC) turbines use a liquid which is locked into endless continuous circulation. It heats up, produces a gas and then is cooled to go around again. Organic means

equipment will work using steam in the cycle (low electrical efficiency) or a working fluid, (higher electrical efficiency). Liquids derived from a number of components such as propanes, hydrocarbons, and siloxanes often have a lower boiling point than water. The liquid used by Freepower is a Kyoto approved environmentally benign hydrocarbon fluid, called a Hexane which has a boiling point of 36 °C.

Making electricity effectively from wasted heat involves exploiting an enormous, existing, worldwide resource which is also free. The ORC system uses it to create a phase shift (liquid to gas), resulting in increased pressure, rotating a turbine and alternator (generator). In the case of the FP120, low grade heat sources at 240 °C or more can provide for example, 120 kilowatts per hour of extra electricity, for revenue generation or grid offset. The system is modular and several can be connected together to achieve greater electrical production if the heat source is sufficient. The FP120 machine is compact, measuring 3.5 meters by 1.3 meters by 2.1 meters and weighs in at 3.5 tons. It is the only single skid fork-liftable 120 kW power source, as seen in this photograph. It is easy to underestimate the importance of this fact.

Higher temperatures allow a higher efficiency and therefore a faster payback. The turbine itself is a patented multi-stage radial inflow turbine with three sets of turbine blades, extracting work out of the vaporized working fluid and delivering the rated capacity of kilowatts. The FP120 has considerable design improvements over predecessor units with its high electrical efficiency and correctly configured balance of plant. The reliability of the machine is very good, in common with the ORC type in general. It is Freepower's goal to have an installed machine work with minimal annual maintenance for 10 years. The turbine rotates at a speed of circa 30,000 rpm and the low boiling point of the fluid permits the team to achieve a dry vapor in which means there is no condensation on the turbine assembly which can cause vibration and inefficiency, in the same manner that dry steam is a desirable for a steam turbine.

Components include: a radial inflow turbine assembly, alternator, electronics package, recuperator, condenser, pumps and connecting pressurized piping. There is also a balance of plant skid and something else important…

… The Working Fluid - The Critical Component

Working Fluids are the key components in ORC systems. Heat transfer efficiency is critical. Almost all competing ORC turbine technologies were built before finding a suitable phase change liquid. Freepower is the very first company to take the time to design with great care, a system whose components are based on matching the turbine dynamics with specific fluids for an ORC turbine. Many machines circulate a multi-component fluid. These fluids are often cobbled together to match the machine which was designed prior to the selection of the fluid using adapted compressors or turbochargers.

Freepower designed the entire functionality of the ORC around a single component. A hydrocarbon called hexane which has a boiling point of only 36.1 °C. They work with two major fluid companies, one in the US and another in the EU. Other fluids such as N. Pentane, Siloxanes and R245FA can be affected by long bouts of temperature cycling which inevitably leads to loss of efficiency and change in liquid characteristics over time. All competitors are already less efficient, more bulky and more expensive so their situation simply worsens with use. Most other ORC's use R245FA, a combination fluid, at lower temperatures, typically those seen in geothermal ie 90 – 140 ºC.

The thermodynamic qualities of the fluid and operating conditions are extremely important. The fluid has to be able to cope with constant heating and cooling cycles and be very chemically stable at all temperatures. Many organic fluids are bad at this and the higher the temperature at which the fluid is stable the better. Also, the freezing point must be lower than the lowest temperature in the cycle.

The turbine is 98% efficient with a direct drive alternator, providing 18% of electrical efficiency. If the cooling circuit water is also used for heating or cooling then the overall system efficiency rises to 96%. Freepower is the only ORC product that can be used as a piece of CHP equipment in its own right. Freepower's two direct competitors, Calnetix and Tri-O-Gen cannot do this.

The efficiency of the condensing unit is directly attributable to its small size as a direct result of the company's know-how. It took longer to design but it was worth the wait. The 'holistic' approach led to a round of component optimization which in turn resulted in less footprint, better efficiency and more economic use of materials resulting in a cheaper ORC. Freepower products are sold already filled with the working fluid, which is contained in a sealed system.

Electronics

Another of the key components of the Freepower system is the electronics package. It was designed by Freepower engineers with a few extras, not found on other

machines, as standard. For example, Freepower products benefit from the capability of remote start-up. They have more controls for matching the power entering the local grid and can have software remotely upgraded, as improvements and enhancements are made. The machines are also capable of plug and play capability making integration into regional grids much simpler.

Water Use

Freepower's design does not waste water. They use a limited quantity of water in a reservoir in a sealed circuit that works with fans as part of the cooling system. In hot countries the Freepower cooling circuit is much the best system since it's not challenged by high ambient heat conditions allowing its efficiency to remain high. Other competing systems remain handicapped by the need for even larger water consuming cooling circuits and condenser units, and in certain areas refrigeration. This is yet another plus for the military customer.

Advantages include:

- Size, due to "holistic" design that takes all components' characteristics into account especially the fluid, and condensers for the cooling circuit
- It's fork-liftable in one fully productized package
- Less costly, being smaller, reduced cost of materials and cheaper to run.
- Once an internal tank is filled and sealed the machine doesn't consume water
- All components are recyclable at end of their lives
- Simple to install package

Financials

The FP120 sells for £100,000 to the distributor but £120,000 if direct to a customer. There is a standardized balance of plant skid, containing the mechanical and electrical controls for the thermal oil transfer and cooling circuits available which cost a further £64,000. As time passes more machines are likely to be sold with a balance of plant skid, as it tends to be less costly than bespoke equipment. Competitor Tri-O-Gen comes to €1.2 million fully installed. Calnetix, the GE subsidiary, sells the turbine and electrical generator only for £133,000, and all the components to make a complete system are extra; balance of plant, installation engineering, condenser or the water cooling tower.

Every sale differs in respect of the particular country and customer. One unit went to Germany where the buyer failed to follow guidelines to protect the unit against the elements resulting in a failure. A glue used for the alternator, guaranteed for low temperatures down to -15 °C, was exposed to -22 °C and failed. On the other hand, an FP6 was sold to a Swedish university who, after they completed their research program, and it lay in a yard exposed to the weather for two years. The equipment was eventually installed by a farmer. When he pushed the start button the system purred perfectly to life.

Some customers have had problems paying for their delivered machines. As the economy improves some of those situations will resolve and free up some capital. Many customers are using asset financing which involves more complex terms and paperwork. The ordering landscape has also changed, unless you have a government guarantee. An Italian distributor is currently advising increases to its next 12 months orders from 15 to 25 FP units.

Freepower have a distributor model where they have a price to the distributor. They are starting to put in place a direct sales model, and have started with military orders. Distributors purchase units that they then sell on to their own client base at a recommended markup of 20%. This is the easiest and quickest route to market commericalisation for the company.

They are currently limited in their ability to build machines to just 2 per month due to its buying power for components. This level of revenues does not result in earnings but merely keeps the situation ticking over resulting in a slight loss. The company benefits from R&D relief from the Inland Revenue, the UK tax authority, where social security payments made for employees (PAYE) are matched against R&D repayments in the following year, thereby limiting this expense to the company and freeing resources.

P&L	2010/11	2011/12	2012/13	2013/14
Total Revenues	**3,920,000**	**20,700,000**	**47,570,000**	**96,180,000**
Unit Sales # FP120	32	166	302	672
Unit Sales # FP85	8	30	193	322
Total Production	**24**	**196**	**495**	**994**
Unit Costs FP120	2,107,077	10,930,462	16,902,708	31,969,625
Unit Costs FP85	448,667	1,682,500	9,200,471	13,047,507
Cost of Revenues	2,555,744	12,612,962	26,103,179	45,017,132
Gross Profit	**1,364,256**	**8,087,038**	**21,466,821**	**51,162,868**
Distribution Expense	151,866	580,000	750,000	1,900,000
Administrative Expenses	528,341	600,000	850,000	1,200,000
Total Operating Expense	**680,207**	**1,180,000**	**1,600,000**	**3,100,000**
Operating Profit	**684,050**	**6,907,038**	**19,866,821**	**48,062,868**
Other Operating Income	244,059	300,000	500,000	1,200,000
EBITDA	**928,109**	**7,207,038**	**20,366,821**	**49,262,868**
Interest	(778)	84,141	314,336	823,257
Pretax Earnings	**927,331**	**7,291,179**	**20,681,158**	**50,086,126**
Tax		2,187,354	4,809,347	12,595,838
Net Gain/Loss	**927,331**	**5,103,825**	**15,871,811**	**37,490,288**
EPS	0.04	0.24	0.76	1.79
Shares	20,966,661	20,966,661	20,966,661	20,966,661

All Figures are calculated by NEF Advisors, LLC

Administrative costs of over $2 million have been accrued and stand as a deductible against future taxes. Upon funding Freepower intends to increase production from 2 machines per month to the current team's maximum production rate of 20 machines per month. It will take approximately 3 months to increase the rate to 5-7 per month initially. They also intend to train further teams to allow increased production. Beyond 3 machines per month the company is profitable. They currently have component shortages and under current terms suppliers need to be paid proforma. Once funded, Freepower becomes profitable within one quarter.

About 5% of machines sold currently are sold directly. Current discussions and enquiries in the pipeline could significantly increase this percentage. One distributor may elect to purchase the balance-of-plant skid with every order. The standard balance of plant skid is now ready to be sold and the forecast model does not take account of such sales, although the expectation is that they will form a large part of the revenues of the business.

Balance Sheet

Current Assets		**Current Liabilities**	
Stock and Work in Progress	114,000.00	Creditors	702,439.47
Debtors	316,069.00	Accruals	117,857.95
Prepayments	39,812.57	Bank & Inter Company Accounts	233,723.82
Cash	690.96	Wages & Pension Control	133,183.21
VAT Liability	46,819.78		
Total Current Assets	**517,392.31**	**Total Current Liabilities**	**1,187,204.45**
Long Term Assets		**Long Term Liabilities**	
Leasehold Property	248,474.68		
Plant & Machinery	160,131.50		
Office Equipment	18,949.00		
Motor Vehicles	6,911.00		
R&D	2,731,778.88		
Total Long Term Assets	**3,166,245.06**	**Total Liabilities**	**1,187,204.45**
		Shareholder Capital	**2,496,432.92**
Total Assets	**3,683,637.37**	**Total Capital**	**3,683,637.37**

PAYE obligations are offset against R&D by the UK tax authorities. Certain officers are owed backpay and have voluntarily gone without salaries to ensure the company has a better chance to reach profitability.

Manufacturing

The typical Rolls Royce production model employs 70% outsourcing and 30% assembly and testing. Freepower also subcontracts and outsources components. Each Freepower machine is manufactured from components supplied by subcontractors. It takes three skill sets, mechanical, electrical and electronic therefore a team of three individuals to build, with each requiring quality mechanical engineers to build the turbine and alternator. Once finished the machine is passed to testing engineers. It currently takes one and a half weeks to build and test each unit.

The existing team is working on 2 machines per month. 1 team of three can handle up to 5 or 6 units per month now but as many as 20 when full economies are achieved. When the company builds two different models at once each worker will be cross trained on both models to add flexibility. The company operates a lean manufacturing standard where teams are reduced to a minimum and their productivity is enhanced to the maximum. This keeps labor costs under control.

Accelerating Productivity

Over time, suppliers will move from supplying components to adding value by supplying whole subsystems as production demand increases which will also keep manufacturing resources lean. For example electric looms, currently compiled in-house from scratch take 2 days to complete and test. They arrive as a fully constructed loom or wiring harness, and only need to be connected, taking less than half a day. Other components are planned to come as subassemblies with pipes and flanges, etc already attached and pressure tested. In addition, team incentives and experience curves will start to apply as the process moves forwards resulting in a much more rapid, efficient construction time and more machines per team per month up to a maximum in the region of 20 machines. Repetitive tasks improve with scale and become more economic. Costs per machine drop and margins improve.

Component suppliers are established on both sides of the Atlantic permitting economies and also making it possible to manufacture turbines with a greater percentage of US components for the US and other markets.

Freepower is expected to have a second team building by the second half of 2011. The current factory in Andover, Hampshire has capacity for 20 machines to be built at once and once full efficiency is achieved, this could be done daily. Then the bottle neck would be the testing facility, which would be alleviated by increasing its capacity. Taking 20 machines a day through their test paces will generate a lot of power for the community.

Subsidies

The Company expects to take advantage of ROC's, which represent the UK version of the US Renewable Portfolio Standard (RPS). In the US over 30 states have RPS programs varying from 15% by 2025 to 20% in California by 2010 and by 2030 33% and 40% in Hawaii. A US electricity provider has a State mandate to generate the RPS percentage of its power using renewable sources. In the UK the goal is 20% by 2020, a commonly seen figure. The UK system obliges the utility to come up with ROC's representing a certain ongoing percentage of renewable energy. If below they are obliged to pay cash per unit of electricity to a fund. Those companies supplying the renewable energy are paid according to the level of ROC's accumulated during the year.

Currently the ROC price per kilowatt hour is £0.11-£0.15. Biodiesel fuel was approved to benefit from this regime, but recently biodiesel as a heat source was discredited from earning ROC's by the UK's electricity authority OFGEM. They

rejected biodiesel following the controversy of food for fuel which implicated it when made inefficiently from food crops such as corn, sugar cane or palm oil. Much was made of the Indonesian burning of prime hardwood forests in order to replace them with palm oil plantations for the biofuel market.

Competition

We can arrange the competitive field in terms of generating capacity size. Rankine cycle turbines (not organic) generate most of the electricity in the world and are manufactured by all the larger fuel burning players in the energy market, GE, ABB, Siemens, Mitsubishi, Doosan Heavy Industries. These Rankine turbines range from 20 megawatts to 200 megawatts of capacity. I visited a 200 megawatt steam turbine powered by oil and natural gas based in Queens, NY a few years ago. It is amongst the largest ever built. Other turbine manufacturers, such as Jenbacher, Capstone and Caterpillar are not considered here as they all also use a fuel and have a combustion chamber which changes the economics and applications significantly.

I have divided the ORC market into three capacity bands, greater than 1MW but less than 20MW, greater than 0.5MW but smaller than 1MW, and smaller than 0.5MW. Trio-O-Gen and Calnetix are the only real competitors to Freepower, however, they are not fully integrated, use either non-Kyoto approved fluids or a combination of fluids that over time would change characteristics (R245FA is a combination fluid). They are less efficient than Freepower and cannot use their cooling circuits for heating or cooling to provide a CHP system which Freepower can do. They are all more expensive, larger, heavier, less flexible and less efficient. In addition all the Freepower products have been completely productized and are available with all their mechanical and electrical components together in the same package with a balance of plant skid as optional. Electratherm and Calnetix both require a separate cooling tower, a common factor with all units using lower temperatures.

Most of the competition, specifically Ormat, has been developing the technology specifically for large scale power production from geothermal heat sources. Even with improvements in modern alternators the fact that many systems are designed to go after lower grade heat sources means lower efficiency because of the size of the cooling circuit. Any change in any one component alters the other components. Freepower's condensing unit is tiny and uses higher input and exit temperatures in comparison with their competitors. Consequently it's the only ORC equipment that does not have a need for a cooling pond or a very cold and convenient supply of cold water.

Freepower are currently selling the FP85 for just over 100,000 and the FP120 for just over 120,000 each. This is a capex of just over 1 per watt. Installed costs for the FP120 are 250,000 all in. This translates to a cost per watt of just over 2.00. This is extremely competitive in the sector and can translate into a payback of less than 2 years if there is a government subsidy program

Below 20 megawatts there are players in the ORC realm:

Ormat – Starting out in Israel developing low temperature geothermal generation which rarely develops more than 15 megawatts per production well, they have been in the field longest. They install ORC systems for other geothermal companies such as US Geothermal, as well as themselves. They have grown worldwide and generate several hundred megawatts in Israel, Kenya, Nicaragua, and the US.

Turboden – Above 1 MW. This company is 40% owned by Pratt &Whitney and operates at temperatures of more than 400 °C.

Maxxtec - Acquired Adoratec. Adoratec use Ormat turbines. They install 1MW and above. Maxxtec are in negotiations to become a distributor for Freepower equipment and have admitted that Adoratec cannot compete in terms of price and flexibility. They can use Freepower equipment in modular format to provide phased maintenance scheduling whilst continuing to provide electrical output from the majority of the equipment. All the larger equipment has to stop producing electricity during maintenance.

Barber Nichols – Manufactures large turbines like Ormat.

Wow Energies – They use propane in their equipment which can be very difficult to manage. They produce ORC's in the range of 3MW - 40 MW.

In general all the above cannot be regarded as competitors, but the long experience (over 30 years) of Ormat provides credibility for the technology in as much as it has been running without problems. Ormat requires a large footprint, is heavy, doesn't provide flexibility and in every case the efficiency is around half that of Freepower's.

Greater than 0.5MW but smaller than 1MW.

Opcon – A Swedish manufacturer that has inherited the twin screw patents and manufactured an 850 kW machine. It can use low temperatures and is relatively efficient, but is the size of a moderate building and needs to have a cooling circuit or cooling tower with cold water inputs for best efficiency.

The sub 500kW producers are the main competitors to Freepower:

Tri-O-Gen – this is a Dutch company that has systems working in the field but they generate less than 50% of capacity because equipment is poorly designed. They use Toluene (it is not Kyoto approved) as their working fluid with a boiling point at 110°C, in excess of boiling water. Toluene is a combustible solvent, and has high thermal stability and is not marked as poisonous, but is regarded as a nasty fluid. The Tri-O-gen unit 125kW has an electrical cabin the size of Freepower's FP120 package. Their full 125kW product is 4 times larger than Freepower's FP120 with 3 separate large skids making up the product. Tri-O-gen' efficiency is around 11%.

Calnetix - A GE subsidiary that manufactures an ORC with an extremely low cooling circuit temperature requirement. It doesn't work well in hot countries. They require a cooling pond, a cooling tower or refrigeration (negating a significant portion of the electrical output they would provide). The equipment is large and bulky because of the condensing system required, and comes in 2 or 3 packages. The condensing unit alone for this product is of similar size to Freepower's entire FP120. We understand that in the field Calnetix efficiency has been shown to be around 11%.

JTEC (Johnson Thermal Electrical Convertor) – This is not an ORC, but developed on principles for the Carnot cycle which Rankine refuted with his ORC principle. JTEC requires high temperature to convert (600°C). Resembling a fuel cell mixed with a Stirling engine the system has a hot and cold end, but is a sealed container with a membrane down the center. Hydrogen at the hot end is forced to cross the membrane separating into a proton, while the electron flows to an electrode. The proton migrates to the cold end where it recombines with the electron. It's only been operated so far in the lab but promises high efficiencies of 60%, unheard of in normal circumstances.

Sub 50kW

Thermatic – They have a 50 kW system and are now getting some traction, although they could be market limited as their evaporator has to be integrated with the source of waste heat. They have a lower electrical efficiency (11%) to Freepower.

Ener-G-Rotors – They are an early stage and small-kW generators with trochoidal gearing and low temperatures. These machines are installed in boiler equipment and do not use waste heat to derive electricity.

Infinity – A Miami based ORC manufacturer and small but questionable patent control - not able to get higher production than 10kW.

Electrotherm uses an ORC system combined with a twin screw expander like Opcon instead of a traditional turbine designed for 30 – 50 kW generation. This enhances the efficiency slightly which they need because they are looking to use low temperature inputs of less than 100°C.

Wilson TurboPower (using Electrotherm). This is a Massachussetts based early stage company that is aiming for a high efficiency (50%) using ceramic elements in the turbine to tolerate high temperatures. They are years away from a field product however.

Turbolina GmbH & Co. KG Adaturb. They offer a 30 and a 60 kW ORC turbine working with biogass systems in Germany. Turbolina has a solar desalination technology and a disaster technology, but it's in a container generating 7kW.

Conclusion

We are in a period of risk aversion after the second largest market contraction since the famous market crash of 1929. Current economies are recovering much faster than that early model would have suggested, due to significant policy differences. Already the investment climate is turning back to its traditional business of innovation and growth. Freepower represents an opportunity to exploit a unique market in cleantech where the competitive forces are minimal, and the opportunity is large, where design is at a premium and paybacks are fast. The combined forces of cleantech growth are now becoming significant presences in energy generation to the point where the label 'alternative energy' is now, instead, mainstream. There are still major technical issues in the larger picture before clean power will go to the next level and while some of those, like wind and solar intermittency are challenges, Freepower's ORC turbines have a huge market and are ready to go. They don't have to design anything or prove any technology. They simply need to buy existing components, utililize labour and take advantage of growing demand reflecting an unstoppable trend towards economic sustainability.

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