

Freedom Motors



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Freedom Motors appreciates the participation of the following organizations for their earlier marketing input, which was used in this business plan:

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San Francisco and London Offices

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Analysis

Table Of Contents

ROTAPOWER® ENGINE DESCRIPTION AND PRODUCTION PLANS.....	9
PRODUCT.....	14
MARKETS.....	18
MARKETING.....	20
MANAGEMENT	24
FINANCIAL INFORMATION	27
APPENDICES.....	33

Executive Summary

Freedom Motors (the “Company”) has exclusively licensed the worldwide manufacturing and marketing rights to the Rotapower® rotary engine for all applications except aircraft and ducted fans. The Rotapower® engine is based on the Wankel rotary engine design and has a number of unique attributes including extraordinarily high power for its weight and volume, very low emissions, and no noticeable vibration. These characteristics have made it the engine of choice for many applications and resulted in letters of intent (LOI) and conditional orders for over 3.5 million engines (~ \$5 billion).

BACKGROUND OF THE ROTAPOWER ROTARY ENGINE

Rotary engines based on the Wankel principle operate with only two moving parts compared to over twenty in a competing 4-stroke piston engine. This lowers cost and greatly improves reliability. The Company was able to acquire the entire rotary engine assets of Outboard Marine Corporation (OMC), one of only two companies that ever mass produced rotary engines. This engine was used in their snowmobile which, to be price competitive with a 2-stroke piston engine, used inexpensive parts with engine design life of 250 hours. The actual life turned out to be much longer.

After Freedom Motors acquired its exclusive license, it undertook an extensive engine development and improvement program based on the successful OMC engine leading to the following results:

- Three patents issued and four more being processed
- Seals and wear surfaces with documented life of over 22,000 hours
- Power to weight ratio three times higher than competing piston engines
- Modular design allows stacking multiple rotors
- Operate on Diesel cycle
- Emissions low enough that in most cases a catalytic converter is not required
- Operate in any position
- Agreements to joint venture or sublicense engine production

ENGINE PRODUCTION STATUS

The Company has developed a family of Rotapower® engine models ranging from 2.5 to 450 horsepower. Many have been integrated and demonstrated in a wide variety of applications. The Company will initiate engine production using rotor displacements of 150cc and 530cc, however, its joint venture partners have identified applications utilizing 27cc and 650cc displacement rotors. Production will take place in two phases. The first phase will produce beta engines that will be provided to original equipment manufacturers (OEM). Completing beta and volume production start-up will require approximately nine months.

IMMEDIATE MARKET OPPORTUNITY

The world market for engines in the power range of the Company’s various models is over 250 million engines per year. For many applications a high power to weight ratio, negligible vibration, and low cost are the most important criteria. Recreational, utility, transportation, and portable high-power applications are the most immediate markets. The utility motor scooter/motorcycle market requires 75 million engines per year. The Company has set the very conservative goal of penetrating 0.05% (130,000) of the annual world engine market by production year five. If just one of the Company’s present conditional orders becomes firm, its planned production capability would be inadequate. The Company has created a number of joint venture partnerships where the partners would manufacture engines for their specific market and provide parts and/or engines to support the Company’s engine production needs as required. This arrangement makes it possible to meet increased production if the current indicated demand materializes.

FUTURE MARKET OPPORTUNITY

There are many applications like gensets for hybrid cars, marine products, and commercial aircraft where in addition to the above attributes, achieving low fuel consumption and very low noise are particularly important. The company has successfully tested a patent pending compound version of its Rotapower® engine that captures much of the exhaust energy. As a result, fuel consumption, exhaust noise, and exhaust temperature are all very substantially reduced. For example, a compound version of the Company's 27cc displacement engine could meet the goal of various governments to have a very efficient (37%) and quiet (55dba) one kilowatt co-genset in every home with natural gas. In the US alone, this is 75 million homes at an estimated cost of \$240 billion.

PRODUCTION FUNDING REQUIREMENTS

Historically, raising capital through a Regulation A stock offering has been problematic due to the difficulty of finding an underwriter to help market the stock. A recent Regulation A+ rule change allows unlimited promotion of a pending stock offering under a "test the waters" campaign. This reduces the need for an underwriter. A number of Reg. A+ offerings have successfully raised \$15 million or more for products with far less demonstrated market demand than the Rotapower® engine. The Company's goal is to raise a total of \$10 million with \$5 million required to ramp up beta and volume production to 130,000 engines per year by production year five. The additional \$5 million will be used to accelerate the following engine development programs:

- Complete development and patent a compound version that reduces fuel consumption by 20% and eliminates 95% of exhaust noise (recovers exhaust energy).
- Complete development and patent a partial adiabatic compound version of its 27cc engine for a one-kilowatt co-genset.
- Complete development and patent a rotor cooling system that allows a further increase in engine power to weight ratio.

These advanced developments should improve both market penetration and profit margins. For example, the basic 27cc Rotapower® engine is an attractive engine for use in the handheld power tool market where its small size and lack of vibration are important, but the engine needs to cost less than \$50 to be competitive, and consequently has a low profit margin. In contrast, a compounded version with its low fuel consumption and little noise makes it an ideal candidate for the demanding genset and co-genset market where an engine price of over \$1,000 could be warranted.

RETURN ON INVESTMENT

Upon meeting the Company's 5-year financial projections, based on very modest sales of its basic engines, the annual compound rate of return (ROI) on an investment at \$2.50 per share price would be 56.5% (p/e=20). However, once its advanced patent pending technologies are market ready, sales of engines by a present and growing list of joint venture partners or licensees should far exceed the Company's own very limited production goal.

As part of an investment agreement, the Company is prepared to offer the investor the opportunity to become a manufacturer and/or distribution of Rotapower® engines or have a model produced specifically for their product.

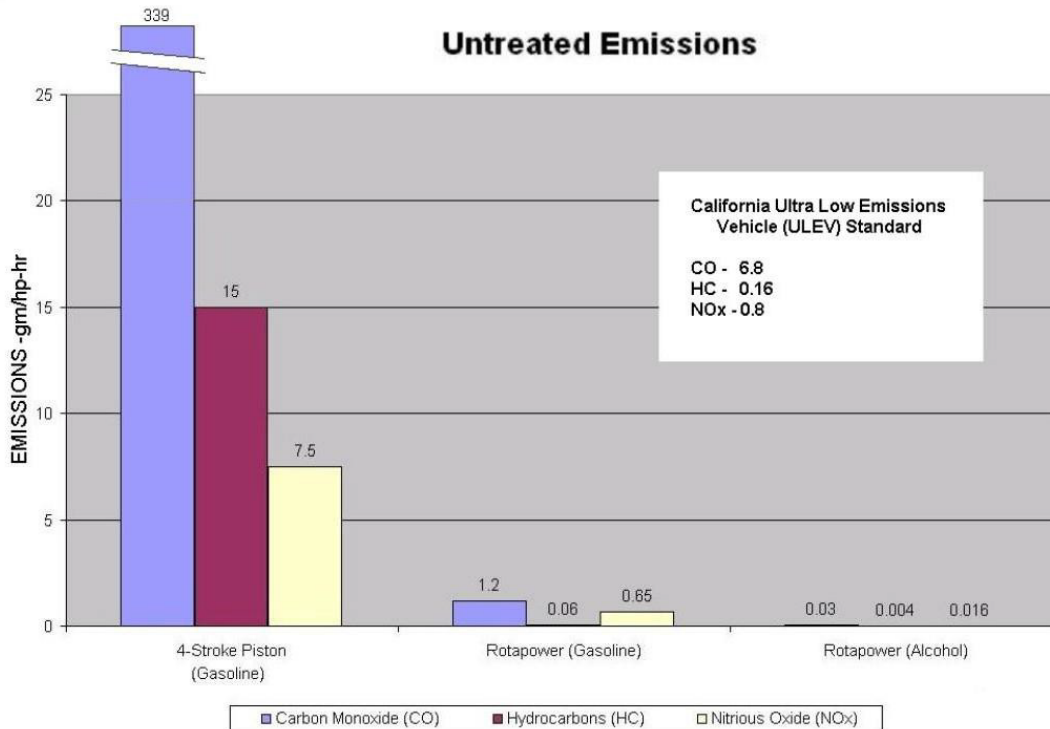
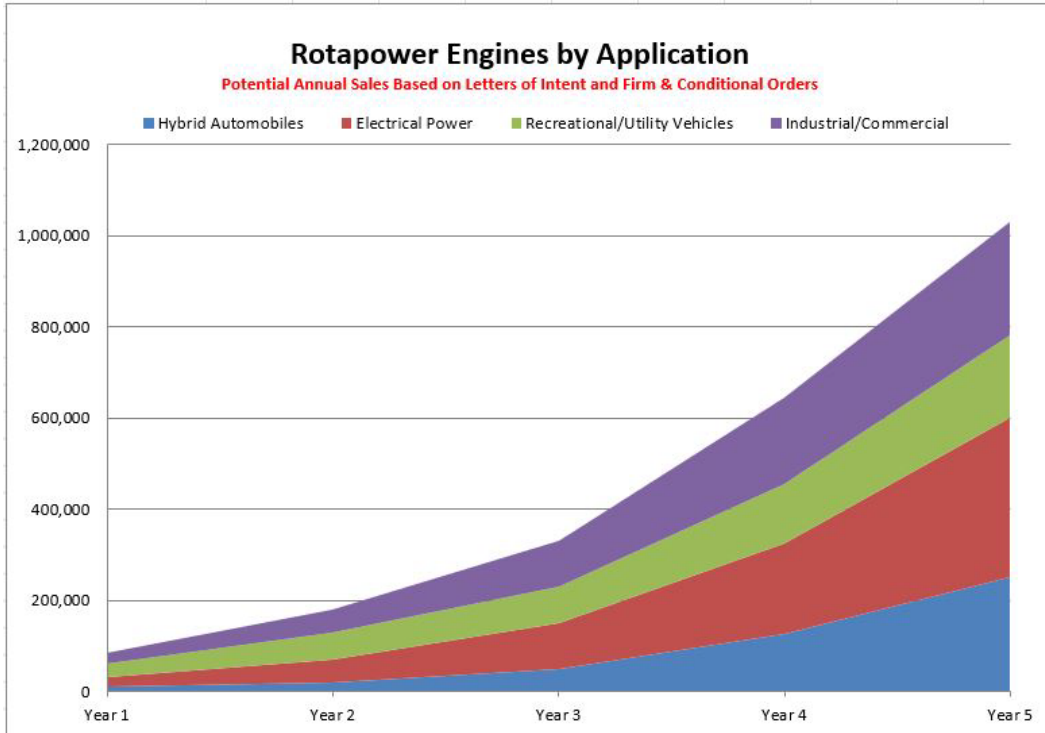
Comparison of Rotapower versus Common Engines

		Displacement	HP	Weight	Volume		Critical Parts
Briggs & Stratton Piston Engine		100cc	2.8	28 lbs.	1.5ft ³		8
Rotapower Engine		27cc or 54cc equiv.	2.8	4 lbs	.2ft ³		2

		Displacement	HP	Weight	Volume		Critical Parts
Vanguard Piston Engine		570cc	18	90 lbs.	3ft ³		15
Rotapower Engine		150cc or 300cc equiv.	18.5	18 lbs	.35ft ³		2

		Displacement	HP	Weight	Volume		Critical Parts
Kohler CH-1000 Piston Engine		1 liter	40	132 lbs.	4.5 ft ³		15
Rotapower Engine		530cc or 1060cc equiv.	40	48 bs.	1.1ft ³		2

* Nominal horsepower, higher horsepower available



Piston engine data from EPA Report No. NR-0106.
 Rotapower engine data verified by California Air Resources Board (CARB) and Dr. Andrew Burke of the Institute of Transportation Studies (ITS), UC Davis.

Applications Using Rotapower®:



Hybrid fuel-electric vehicle (530 cc)



All Terrain Vehicle - ATV (530 cc)



Mini-Jet Boat (1060 cc)



Trimmer (27 cc)



Snowmobile (1590 cc)



Jetski (1590 cc)



Portable Gen-Set (150 cc)

Aviation - Related Applications

Aerobot



Neuera



Skycar



Most recent application



Motor Scooter (150cc)

ROTAPOWER® ENGINE DESCRIPTION AND PRODUCTION PLANS

The Rotapower® engine is a low cost and low emissions replacement for two and four-stroke piston engines in the worldwide engine market. Because of its high power-to-weight ratio it is particularly suited where portability is important (e.g., power tools, generator sets, pumps, etc.) or in applications where size is critical (e.g., hybrid cars). The Rotapower® engine has been demonstrated in a number of these applications.

The Rotapower® engines are based upon:

- **Proven, Inexpensive Technology** - the core technology was acquired from Outboard Marine Corporation, which produced the only rotary engine ever manufactured in volume in the United States. OMC developed this technology and produced 15,000 engines in the 1970's in anticipation of stricter emission standards that only now have become law. These engines, collectively, accumulated millions of hours in operation. Manufacturing cost comparisons performed by OMC proved that the rotary engine was cost competitive with their simplest two-stroke engine.
- **Patented Technology** - Advanced proprietary improvements to the core technology have enhanced reliability, improved fuel consumption, and dramatically lowered emissions.

This combination of solid historical development coupled with patented technical innovation has resulted in an engine that has demonstrated:

- **Superior Emissions Performance** - Tests verified by members of the California Air Resources Board (CARB) showed that the Rotapower® engine operating with gasoline produces less than 1% of the toxic emissions of commercial four-stroke piston engine. Emissions tests carried out in cooperation with the Institute of Transportation Studies at the University of California have established that the Rotapower® engine can meet the California Ultra Low Emissions Vehicle (ULEV) standard with minimal use of a catalytic converter.
- **Outstanding Compact Power Delivery** - Power to weight ratio for the Rotapower® engine is better than two-stroke engines, and very much better than four-stroke gasoline and diesel piston engines. With only two critical moving parts, cost, and maintenance are well below that for the four stroke piston engines.
- **Operates Well On Various Fuels** - The Rotapower® engine has run successfully on gasoline, kerosene, alcohol, natural gas, and diesel fuel.

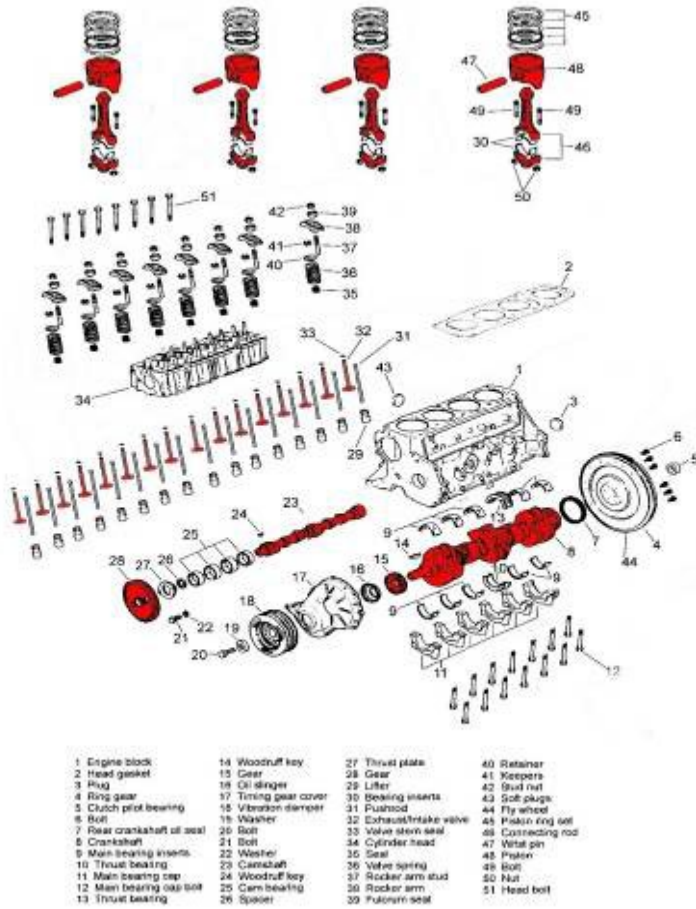
Freedom Motors will begin production with two rotor displacement models:

- **530 series.** A modularly designed engine that allows choices between one and six joined modules producing up to and between 75 to 450 hp.
- **150 series.** A single or twin-rotor design producing up to 25 hp per rotor.

Prior to entering volume production, the Company will undertake production of two hundred of both the 150cc and 530cc engines. This will make “Beta” engines available to those OEM who have supplied letters of intent (LOI) to acquire over 3.5 million engines.

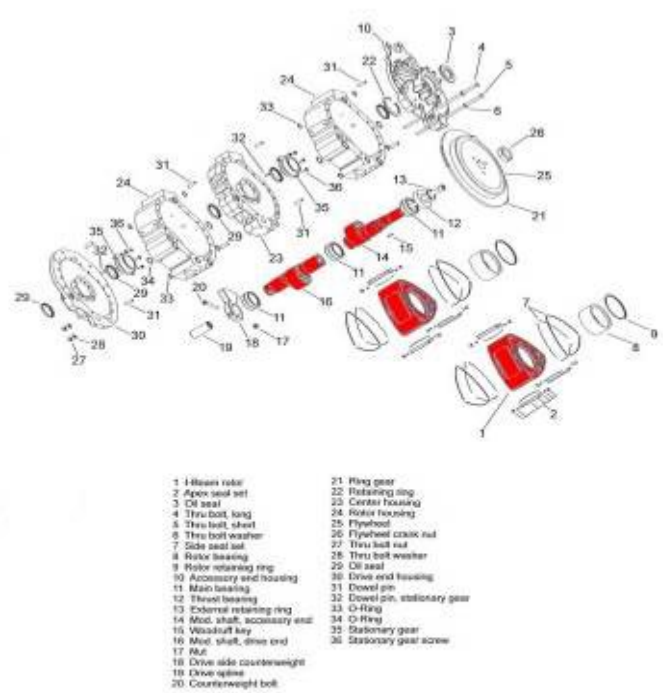
Comparison of Critical Parts

4-Cylinder 4-Stroke Piston



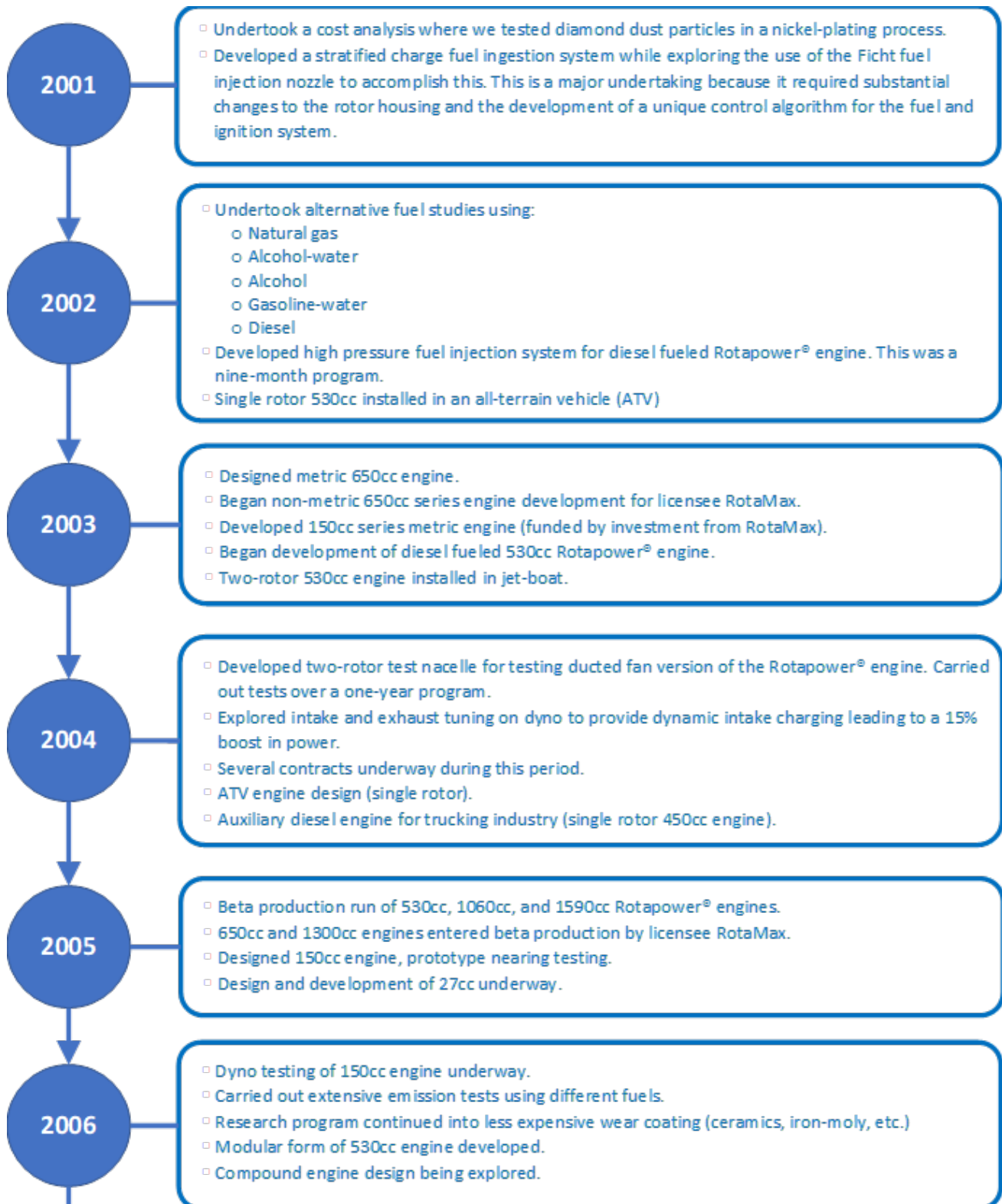
32 Moving Parts

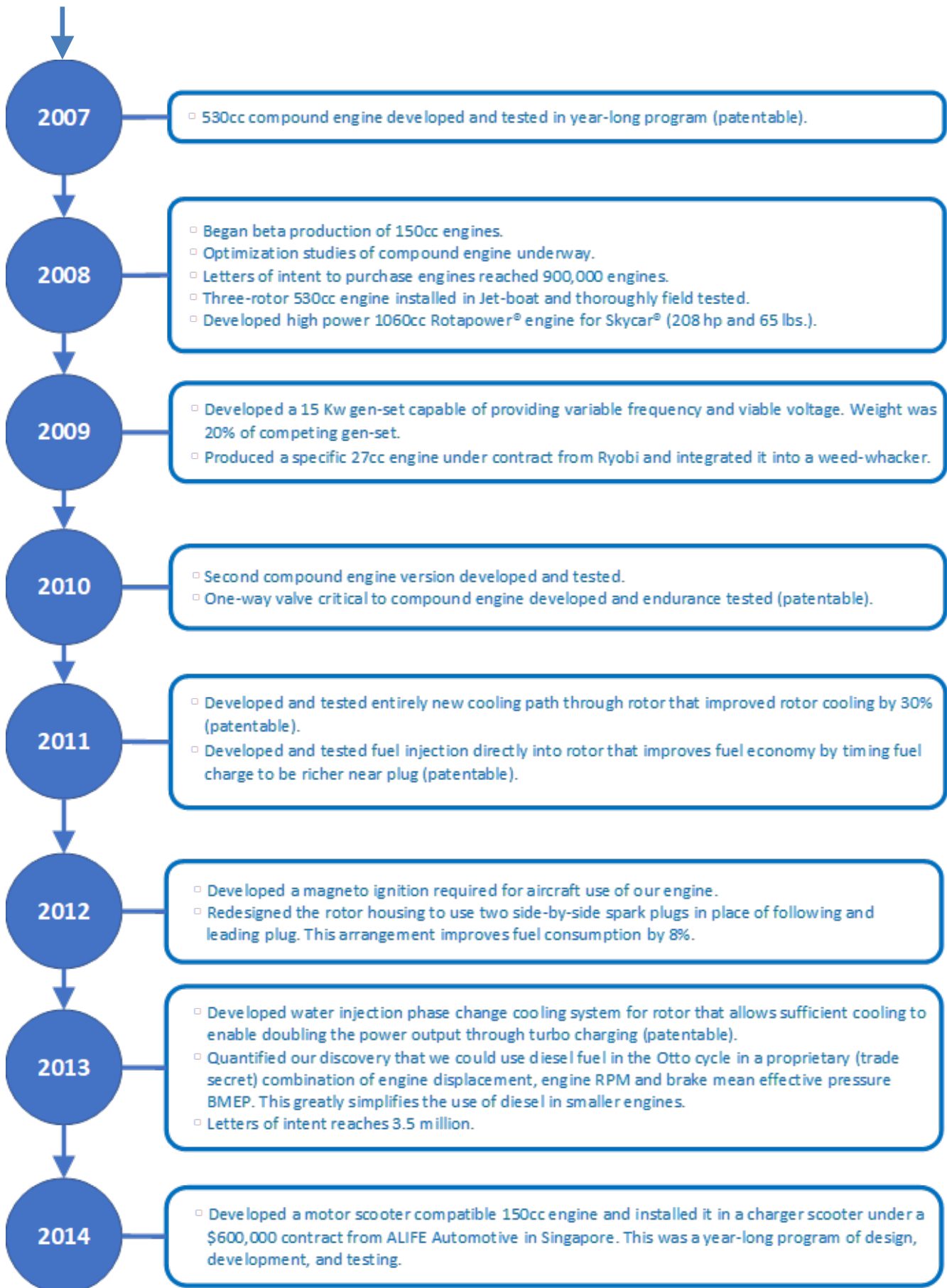
2-Rotor 4-Stroke Rotapower Rotary

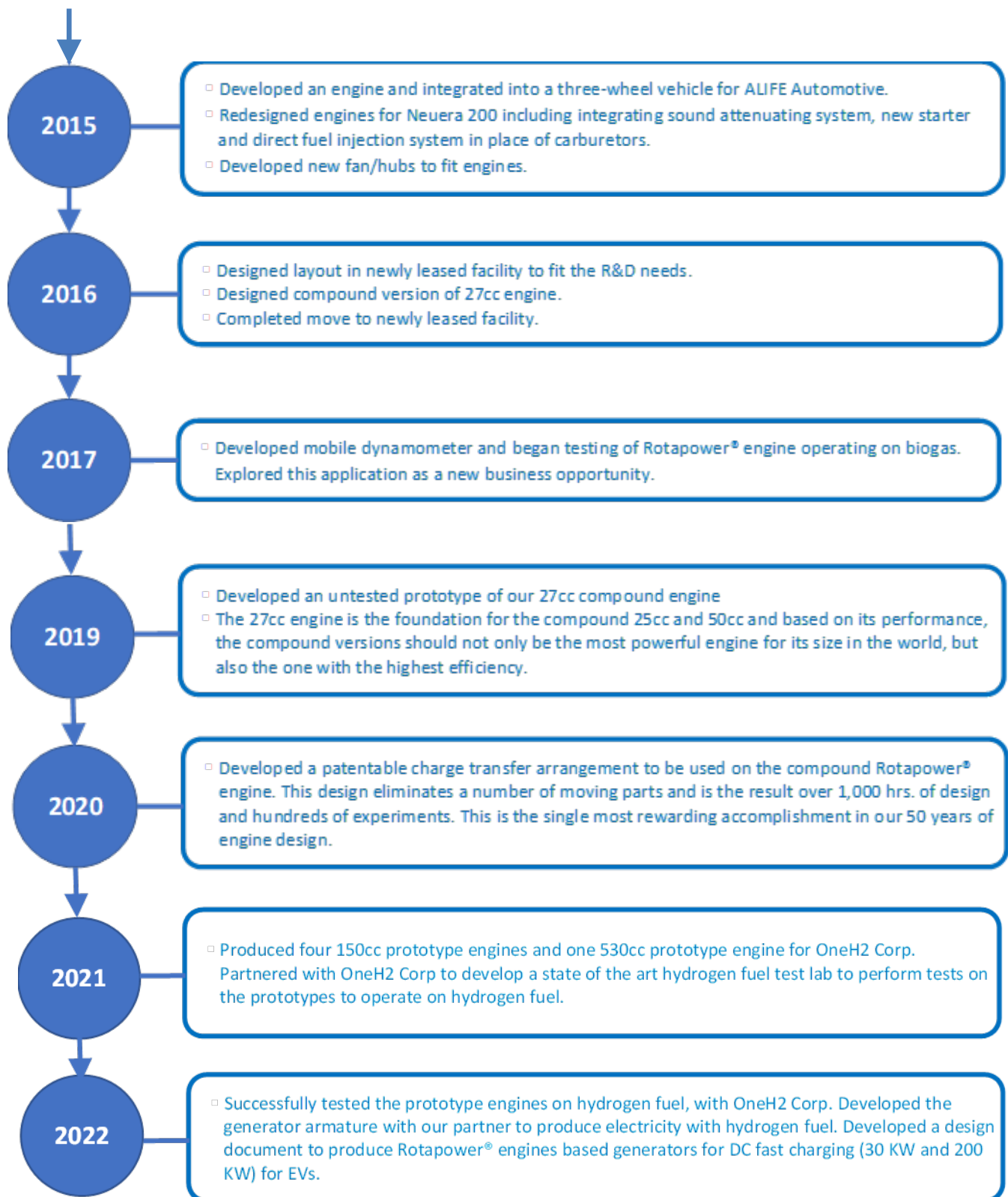


3 Moving Parts

In 2001, Freedom Motors, Inc. is spun off as independent company with license to manufacture and distribute Rotapower Engines for all applications except aircraft and ducted fans.







ROTAPOWER® ENGINES CAN:

- Replace most engines worldwide
- Become the engine of choice for hybrid cars
- Effectively competes with the 4 stroke piston engine in markets like auxiliary power units (APU) where weight, size and multi-fuel capability are important

PRODUCT

ROTAPOWER® ENGINES MODELS

Engines are generally categorized by the total displacement of the engine. Commercial engines typically produce about 3 HP for every 100cc of displacement. High performance automotive engines can produce 7 HP for every 100cc, as do many two-stroke engines. The Wankel-type engine is unique as it produces one power stroke per revolution of the output shaft from one rotor like a single two-stroke piston engine but operates on the much more efficient four-stroke combustion cycle. The Wankel-type rotary engine, therefore, is considered to have twice the displacement of a four-stroke piston engine of the same nominal displacement. The Rotapower® engine can comfortably produce 7 HP for every 100cc in commercial form and up to 15 HP for every 100cc in a high performance configuration.

The table below is a summary of the technical specifications of the initial Rotapower engines

		27 SERIES	150 SERIES		530 SERIES			
No. of Rotors		1	1	2	1	2	3	4
Displacement		27cc	150cc	300cc	530cc	1060cc	1590cc	2120cc
Moving part count		2	2	3	2	3	4	5
Engine Weight*		4 lb	25 lb	35 lb	48 lb	70 lb	92 lb	114 lb
		2 kg	11 kg	16 kg	22 kg	32 kg	42 kg	52 kg
Starter system		Recoil	Recoil and/or starter	Recoil and/or starter	Recoil and/or starter	Starter	Starter	Starter
Fuel system		Carburetor	Carburetor or EFI	Carburetor or EFI	Carburetor or EFI	Carburetor or EFI	Carburetor or EFI	Carburetor or EFI
Housing Cooling		Air	Liquid or Air	Liquid	Liquid	Liquid	Liquid	Liquid
Rotor Cooling		Charge	Charge or Air	Charge or Air	Charge or Air	Charge or Air	Charge or Air	Charge or Air
Dimensions L,W,H**		5 x 5 x 4 in.	7 x 7 x 7 in.	10 x 7 x 7 in.	10 x 11 x 11 in.	16 x 11 x 11 in.	21 x 11 x 11 in.	26 x 11 x 11 in.
		13 x 13 x 9 cm	18 x 18 x 18 cm	25 x 18 x 18 cm	25 x 28 x 28 cm	41 x 25 x 25 cm	53 x 28 x 28 cm	66 x 28 x 28 cm
Standard	Max Power	2.5 hp	20 hp	40 hp	60 hp	120 hp	180 hp	240 hp
		1.8 kW	15 kW	30 kW	45 kW	95 kW	135 kW	180 kW
	Rated Power	2 hp	15 hp	30 hp	40 hp	80 hp	120 hp	160 hp
		1.5 kW	11 kW	22 kW	30 kW	60 kW	90 kW	120 kW
	Rated Speed	9,000 rpm	6,000 rpm	6,000 rpm	4,500 rpm	4,500 rpm	4,500 rpm	4,500 rpm
	Rated S.F.C.	.55 lb/hp-hr	.5 lb/hp-hr	.5 lb/hp-hr	.45 lb/hp-hr	.45 lb/hp-hr	.45 lb/hp-hr	.45 lb/hp-hr
336 g/kWh		305 g/kWh	305 g/kWh	275 g/kWh	275 g/kWh	275 g/kWh	275 g/kWh	
High Performance	Max Power	3 hp	25 hp	50 hp	80 hp	160 hp	240 hp	320 hp
		2.2 kW	19 kW	37 kW	60 kW	120 kW	180 kW	240 kW
	Max Speed	12,000 rpm	9,000 rpm	9,000 rpm	7,500 rpm	7,500 rpm	7,500 rpm	7,500 rpm

* Includes pull starter, alternator, lubrication, fuel and ignition systems (no exhaust)

**Long block (includes flywheel)

These Rotapower® engines are well suited to address the majority of the two-stroke engine market. Specifically, the planned 150cc series is the right size for the developing world utility and transportation markets between 7.5 HP and 20 HP.

COMPETITIVE ADVANTAGES

The Rotapower® rotary engine combines the attributes of both the two and four-stroke piston engines¹ in a low cost design, solving the problems of fuel consumption and emissions that have limited the use of rotary engines. Historically, the charged cooled rotor rotary engine had a low cost but unimpressive fuel consumption and emissions (OMC and Fichtel-Sachs approach) or high cost with acceptable fuel consumption and emissions (Curtiss-Wright, John Deere, and RPI approach)². Mazda rotary engines operated between these two extremes without a clearly defined set of attributes. The Rotapower® engine has retained the simple low cost approach of the original OMC design and, through patented and proprietary technology, has been able to lower fuel consumption and emissions.

In the automotive market, previous rotary engines (Mazda and NSU) have had somewhat poorer fuel consumption than four-stroke piston competitors. Despite their lower weight, emissions, and cost, this limitation caused the automotive companies to be unwilling to re-tool their engine and chassis plants to use these engines. In addition, the existing emissions from recreational and small commercial engines were not a major concern. The following developments now make the Rotapower® engine a highly competitive alternative powerplant.

- The Company's patented rotor cooling and porting arrangement has reduced both emissions and fuel consumption while also lengthening engine life by lowering thermal stresses within the engine. This technology together with lower internal energy losses by using roller bearings and charge rotor cooling has made the Rotapower® engine's fuel consumption competitive with the four-stroke piston engine.
- Pollution is now becoming such a dominant issue that two-stroke engines are disappearing completely worldwide while four-stroke piston engines must significantly reduce their exhaust emissions.
- The low levels of CO, HC, and low NOx emissions from the Rotapower® engine makes it possible to require minimum after treatment of the exhaust.

¹ "The Operation and Performance of the Charge Cooled Rotapower Engine vs. Oil Cooled Rotor Wankel Engines," Corporate Paper No. 9912, February 1999

² All three companies reflect the same engines as the technology was transferred from one to the other.

COMPARISON WITH A TWO-STROKE ENGINE

Recent advances have potentially improved the fuel consumption and emissions characteristics of two-stroke engines by utilizing a sophisticated fuel injection system. Those systems are expensive, offsetting the cost advantage the two-stroke has historically enjoyed (estimated by CARB responses to add at least 35% to engine cost). The two-stroke will remain handicapped by high vibration, high fuel consumption, noise, and emissions. The only Wankel rotary type engine of a similar design to the Rotapower® engine that was put into volume production, was the OMC rotary. A major design goal in the OMC development was to be cost-competitive with the two-stroke engine it was designed to replace. OMC achieved this goal with their rotary engine which proved to be far more reliable than the two-stroke engine it replaced.

The Rotapower® engine equivalent of a two-stroke engine:

- **Produces more power for a given weight and size:**

Two-stroke engines are capable of producing approximately one horsepower per pound of engine weight while the Rotapower® engine has produced over two horsepower per pound of engine weight.

- **Produces much lower emissions:**

In recent tests observed by CARB, the Rotapower® engine produced 3 g/hp-hr of combined HC and NOx emissions. This compares with over 300 g/hp-hr for carbureted two-stroke engines and 40 g/hp-hr for direct injected two-strokes. While the Rotapower produced negligible amounts of particulates, the direct injected two-stroke produced large quantities of carcinogenic particulates. Measured CO emissions from the Rotapower engine were .07% of those from the two-stroke engine.

- **Is free from vibration:**

The Rotapower® engine has only rotary motion (like the turbine engine) and, with perfect balance, is free from vibration.

- **Has better fuel economy:**

The best commercial two-stroke engines achieve a specific fuel consumption of .6 lb/hp-hr. Tests to date have shown the Rotapower® engine using less than .45 lbs./hp-hr.

- **Is quieter:**

Two-stroke engines cannot tolerate much exhaust back-pressure, hence muffling these engines is difficult without a very large muffler. The Rotapower® engine uses the four-stroke cycle, which is more tolerant of exhaust back-pressure.

- **Is more reliable:**

Two-stroke engines use roller bearings, as does the Rotapower® engine. However, in the two-stroke engine very large reversing stresses are induced as a result of the reciprocating motion. Roller bearings do not tolerate reversing motion and the associated stress well.

COMPARISON WITH A FOUR-STROKE PISTON ENGINE

There has been little innovation in this category in the last 30 years. The only trend is a gradual switch from gasoline to diesel engines. Existing gasoline commercial engines are heavy relative to the power they generate. These engines are also rated for relatively low speeds. The most efficient way to gain power-to-weight advantage is by operating at higher speeds, but those conditions cause vibration and durability problems for reciprocating engines since balancing is very difficult, especially if they have four or fewer cylinders. The Rotapower® engine is uninhibited by valves, has no reciprocating parts, and its rotor rotates at one-third of the output shaft RPM, so it thrives on higher speeds without sacrificing durability or smoothness. It is therefore particularly effective in applications where portability or compact size is important.

The Rotapower® engine equivalent of a four-stroke piston engine:

- **Produces much more power for a given weight and size:**

Very few four-stroke piston engines can produce more than one-half horsepower per pound versus over two horsepower per pound of engine weight for the Rotapower® engine.
- **Produces lower emissions:**

Under contract from CARB, Southwest Research Institute tested emissions produced by small four-stroke piston engines. These results were compared with emissions from the Rotapower® engine as observed by CARB and the Institute of Transportation Studies (ITS). In this comparison the Rotapower engine produced .6% as much HC, .08% as much CO, and 9.7% as much NOx as the small four-stroke piston engines tested by SRI.
- **Is cheaper to produce:**

Four stroke piston engines cost 25 to 30% more than simple two-stroke engines. OMC produced their four-stroke rotary engine, on which the Rotapower® engine is based, for the same cost as their two-stroke engines. OMC stated that, had they produced their rotary engine in similar volumes to their two-stroke engines, the cost would have been even lower.
- **Is free from vibration:**

The Rotapower® engine has pure rotary motion and therefore free of vibration.
- **Has similar or better fuel consumption:**

In order to preserve the exhaust valve life, small four-stroke piston engines use a rich fuel-air mixture running typically at close to .6 lb/hp-hr. The Rotapower® engine's freedom from valves allows it to run well at very lean mixtures, which in addition to lower fuel consumption, also helps lower emissions.
- **Is more reliable:**

With only a very small percentage of the moving parts of a four-stroke piston engine and only rotary motion, the Rotapower® engine is inherently more reliable. Wankel rotary engines produced in the late 1960's by Ingersoll-Rand have accumulated over 34,000 working hours without an overhaul. Many OMC rotary engines operated for well over 2000 hours without an overhaul. The Rotapower® engine uses higher quality seals and bearings than the OMC engine and has been able to demonstrate a seal life of over 10,000 hours.

MARKETS

As the following table shows, the combined worldwide market where the Rotapower engine's use in commercial and recreational applications is competitive and is estimated to be over 122.5 million engines per year. The Company is ready to provide engine solutions to OEM's in many vertical markets. Its engines offer the low cost of a carbureted two-stroke engine with the attributes of the more expensive four-stroke piston engine.

Worldwide Engine Production

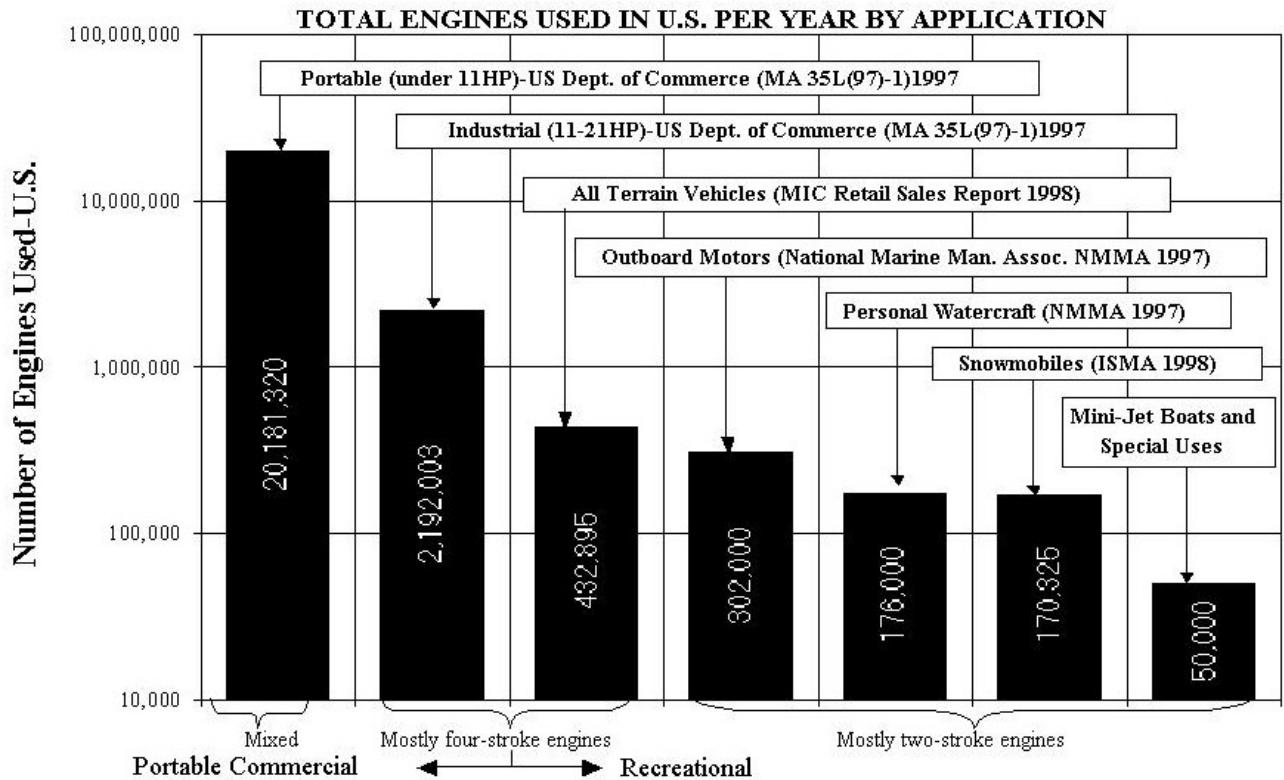
WORLDWIDE NON-AUTOMOTIVE ENGINE PRODUCTION

Country	*0 – 5 HP	5 – 10 HP	10 – 15 HP	15 – 20 HP	20 -50HP	50 – 100 HP	100 – 200 HP	200 – 300 HP
Africa	0	6,487	3,073	3,596	1,959	2,270	946	53
Australasia	154,042	279,777	0	0	61	73	1	0
Central Asia	3,789,105	13,337,153	12,087,564	1,790,867	853,736	366,323	113,026	34,634
Central & South America	421,169	141,362	4,532	29,519	1,277	16,375	26,964	1,998
Eastern Europe	174,943	114,506	47,844	29,238	130,222	94,770	36,583	11,380
Far East	4,837,106	3,763,106	2,807,414	1,118,361	2,346,008	1,179,197	306,228	31,996
Middle East	28,833	5,896	258	0	0	333	278	0
North America	11,103,113	7,165,439	1,658,303	1,315,765	398,367	624,645	285,994	186,547
Southeast Asia	883,350	1,688,426	1,034,640	128,111	143,809	813	1,078	234
Western Europe	7,569,682	2,970,770	463,775	132,551	373,233	586,015	418,897	56,983
TOTAL	28,961,343	29,472,922	18,107,403	4,548,008	4,248,672	2,870,814	1,189,995	323,825

*not included in potential market

Worldwide Automotive Engine Production (Cars, Minivans, SUVs, Vans, All Trucks & Buses)

	20 -50HP	50 - 100 HP	100 - 200 HP	200 - 300 HP	TOTAL
Africa	0	139,220	3,578	0	142,798
Australasia	0	20,585	293,704	180,211	494,500
Central Asia	1,154,900	3,050,036	1,457,568	130,223	5,792,727
Central/South America	286,148	1,894,527	642,886	79,374	2,902,935
Eastern Europe	163,315	2,102,794	2,181,706	152,209	4,600,024
Far East	1,133,267	5,810,236	8,601,264	1,760,343	17,305,110
Middle East	0	68,426	25,253	0	93,679
North America	0	19,831	6,883,304	6,317,358	13,220,493
Southeast Asia	0	495,383	455,720	253	951,356
Western Europe	440,020	8,820,255	5,594,662	1,295,916	16,150,853
Total	3,177,650	22,421,293	26,139,645	9,915,887	61,654,475



U.S. Sales in dollars to Original Equipment Manufacturers are reflected in the following table.

Appropriate U.S. Market Size for Rotapower Engine Product Line					
		Power Need	Total Units	Total \$	Rotapower Product
Portable Commercial	Gas	Under 11 HP	5,045,250	2,976,000,000	150cc
		11 to 21 HP	2,192,000	1,293,280,000	150cc
		21 to 61 HP	137,000	208,000,000	300cc / 530cc
		Over 61 HP	277,000	554,000,000	Multi-rotor
	Diesel	Under 101 HP	18,112	63,000,000	Single & Multi-rotor
Recreational Engines		Outboard	302,000*	453,000,000	Single & Multi-rotor
		ATV + PWC + Snow	778,000*	1,167,000,000	Single & Multi-rotor
		TOTAL	8,749,362	\$6,590,000,000	

MARKETING

MARKET CONSIDERATIONS

The production cost of engine parts is very volume dependent. As an example, the cost of side seal springs vary from \$10 each for the volume required to build 250 engines to \$2.70 each for the volume required to build 7,500 engines.

Another factor is that engine prices are directly related to horsepower output. Therefore, a higher horsepower engine, which may cost 30% more to build, could sell for twice the price. For that reason the Company is not prepared to produce its 27cc displacement engine at this time. Profit margins are going to be less on the Company's 150cc engine versus its single and twin-rotor larger displacement models..

CUSTOMER PROFILE

The Company has received letters of intent from a wide variety of potential users (See Appendix C). The dominant use is for motor/generator sets including in-home co-generators, recreational vehicles, and Plug-in Hybrid Electric Vehicles (PHEV). These product areas are ideal candidates for single-rotor engines with rotor displacements of 150cc and 530cc. Twin-rotor versions of these rotor displacements will be made available in production year two.

Initial engines produced will be sold to original equipment manufacturers (OEM). This has a number of benefits, namely:

- Little advertising required
- Direct contact, engineering, and sales facilitate direct feedback
- Engine design can accommodate unique requirements of each installation but avoid a proliferation of parts and models
- Reduces parts, service, and training network - train only OEM service people
- Predictable but cyclic demand, few customers, major interdependence
- Indirect warranty and liability
- Dependable cash flow, simplified financing

OEMs have the critical mass and extensive distribution channels to serve their customers with end products, therefore they can readily assume much of the service responsibility in bringing the engine to market.

SELLING PRICE

To establish a competitive selling price for its Rotapower® engines, the Company surveyed the existing distributor prices for engines offered by the four major engine suppliers in the US. They include Teledyne Wisconsin, Kohler, Briggs and Stratton, and Honda. The distribution pricing was generally consistent except for Teledyne Wisconsin which was generally about 20% higher. Excluding Teledyne Wisconsin, the average price ranged from \$80 per horsepower down to \$60 per horsepower for the higher powered engines. The OEM price can be up to 15% lower than the distributor price.

The Rotapower® engine prices are shown in the following chart. (derated for long life application)

Engine	150cc	530cc	1060cc
Power	15 hp	40 hp	70 hp
Price per hp	\$80	\$70	\$60
Distributor Price	\$1,200	\$2,800	\$4,200
OEM Price	\$1,020	\$2,380	\$3,570

SELLING METHODOLOGY

Selling only to OEMs greatly simplifies both customer identification and the stages in the selling cycle. To build the customer base and product recognition, Freedom Motors will attend all relevant trade shows, sponsor competitions, and promote the Rotapower engines as appropriate. In the PWC replacement market, there are only two jet pump installation configurations. Therefore, adaptation is relatively simple and well understood. In the APU market, engine choice is often based on portability and size. In many cases potential purchasers of the Rotapower engine have considered its small size the key element in their desire to use this engine. It is only necessary to meet the established engine-centerline to base distance and couplings in order to fit essentially any existing product. Since the cooling heat load is less with Rotapower, there will be no need to alter or replace the existing radiator, etc. this simplifies adapting to existing OEM applications.

MEETING EMISSIONS REQUIREMENTS

Tests carried out in conjunction with the Institute of Transportation Studies (ITS) at the University of California at Davis and witnessed by members of the California Air Resources Board (CARB) saw the Rotapower® engine using gasoline as a fuel, achieve hydrocarbon, carbon monoxide, and nitrous oxide emission levels low enough to require very little after treatment.

Recently, similar tests were carried out using ethanol as a fuel. It has proven to be the ideal fuel choice, due to properties such as its high heat of vaporization which causes much more effective cooling of the rotor. Using ethanol resulted in emissions well below those for gasoline. The results of the earlier tests with gasoline and the recent tests with ethanol are tabulated as follows:

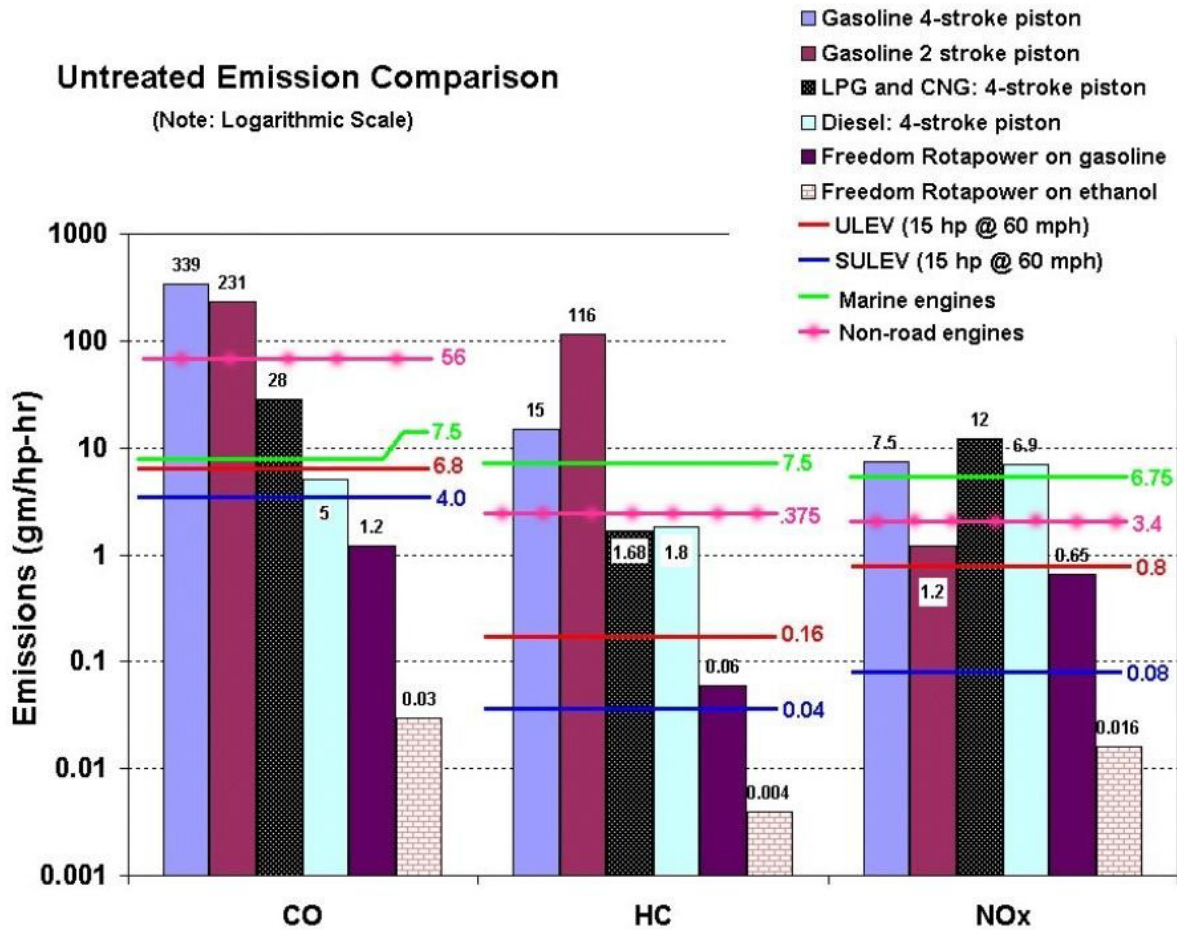
Rotapower engine running on gasoline	Rotapower engine running on ethanol
<u>Unburned hydrocarbons (HC)</u> .6 ppm = .0635 gm/hp-hr = .016 gm/mi	<u>Unburned hydrocarbons (HC)</u> .5 ppm = .0043 gm/hp-hr = .002 gm/mi
<u>Carbon monoxide (CO)</u> 372 ppm = 1.24 gm/hp-hr = .31 gm/mi	<u>Carbon monoxide (CO)</u> 9 ppm = .03 gm/hp-hr = .013 gm/mi
<u>Nitrogen oxide (NOx)</u> 100 ppm = .65 gm/hp-hr = .16 gm/mi	<u>Nitrogen oxide (NOx)</u> 3 ppm = .016 gm/hp-hr = .007 gm/mi

The Rotapower engine can be operated with a very lean fuel-air mixture (lots of excess oxygen), which together with the much hotter exhaust than two-strokes, burns up normally unburned hydrocarbons and reduces carbon monoxide. With exhaust gas recirculation, the Rotapower engine's nitrous oxides are also low compared to the four-stroke piston engine³.

³ "The Emissions Performance of the Rotapower Engine," Corporate Paper No. 9913, February 1999

Untreated Emission Comparison

(Note: Logarithmic Scale)



References:

Data for Gasoline, LPG and CNG from EPA Report No. NR-010b; Diesel data from EPA Report No. NR-009
 Freedom ULEV data in conjunction with Dr. Andrew Burke, ITS, University of California Davis
 Freedom SULEV data from Moller International dyno and emission tests

MANAGEMENT

Paul Moller

Chairman of the Board, President, Chief Technology Officer

Dr. Moller was a professor of Mechanical and Aeronautical Engineering at the University of California, Davis, from 1963 to 1975, where he developed the Aeronautical Engineering program. He founded several companies including SuperTrapp Industries (founded in 1972), which became the most recognized international name in high-performance engine silencing systems. In 1983 he founded Moller International to develop powered lift aircraft and rotary engines. In 1985, Dr. Moller founded Aerobotics Inc. to develop unmanned aircraft (aerobots) using its proprietary flight control systems and Rotapower® engines. Subsequently aerobots were delivered to three branches of the US military as well as select civilian buyers. In 2001, Moller International exclusively licensed Freedom Motors to develop, manufacture, and distribute Rotapower® rotary engines. Dr. Moller holds numerous patents on rotary engines, power transmission, engine silencing techniques and aircraft design. He received his M. Eng. and Ph.D. from McGill University in the fields of mechanical and aeronautical engineering.

Subhash Paluru

Chief Executive Officer

Dr. Paluru was appointed to the US Government's Senior Executive service (SES) during President Obama's administration. As a SES, He led the Western Area Power Administration's (WAPA) Sierra Nevada Regional Office (SNR). Dr. Paluru also served in several leadership roles in Information Technology, Power Operations, Critical Infrastructure, and Reliability Compliance. He is a well-known authority in utility leadership and represented WAPA in national organizations like Peak Reliability and Electric Power Research Institute (EPRI). During his tenure as the Deputy Assistant Secretary in the Office of Electricity, U.S. Department of Energy, he led the Power Systems Engineering Research & Development. Dr. Paluru holds a PhD in Physics in the field of High Temperature Superconductors and their applications.

David Sastry

Chief Operating Officer, Director

Mr. Sastry has many years of experience as a senior engineer at companies like Intel Corporation, Freescale Semiconductor Inc, and Marvell Semiconductors Inc. More recently he has been a Principal Engineering Consultant for Infosys in their IoT Practice in Sacramento, CA. Mr. Sastry manages Freedom Motors IT systems, social media presence, and he participates in on-going business development activities. Mr. Sastry holds a BSc and MSc degrees from Ohio State University in electrical engineering.

Jim Toreson

Director

Dr. Toreson has over 16 years of experience as a chief executive, and over 20 years of experience in manufacturing, including quality control, materials management, JIT production, process control, and manufacturing engineering. He also has eight years of experience in flexible automation, statistical process control (SPC), and quality system including ISO 9000 and Six Sigma programs. More recently, he founded ONSHORE, a management consulting firm specializing in technology-intensive products and services. He has acted as the CEO of Chineseinvestors.com, an Internet portal serving the world-wide ethnic Chinese marketplace for

financial services. Dr. Toreson earned a BS and MS in Electrical Engineering from the University of Michigan, and a Dr. of Science from the University of Nevada.

George Stevens
Chief Engineer

Mr. Stevens received his B.S in Electronic Engineering from Brigham Young University in 1984. He then joined General Research Corp., working on their advanced missile fire control and guidance systems. In 1993, he received a B.S. in Mechanical Engineering from California State University, where he also did graduate work on engine and hybrid car development. He then joined GSC Inc., where he was a program manager during their development of two-stroke diesel engines. In 1997, he joined Freedom Motors, as program manager, during the development of its Rotapower® engine and propulsion systems for its aeronautical products.

Rosa Maria Moller
Secretary/Treasurer

Dr. Moller has many years of experience as a researcher in social sciences and as a senior economist. She has worked in various international socioeconomic projects conducted by the Demographic Center for Latin America and the Caribbean (PISPAL) and the Economic Commission for Latin America. (ECLA). More recently, Dr. Moller has worked for various agencies of the State of California, where she was a policy analyst /senior economist, analyzing numerous subjects. In that capacity, she used economic models and techniques to measure the costs and benefits of various state environmental and social programs and to forecast economic trends in the California economy. She holds the equivalent of a MA in Sociology from the Catholic University of Chile and a PhD in Economics from the University of California, Davis.

John D'Alessandro
Director

Mr. D'Alessandro has over 40 years' experience managing many types of programs in the oil and gas industry. For the last 25 years he worked for SPEC Services, Inc. as their Principal Project and Process Systems Division Manager, where he led projects in wastewater, landfills, oil production, and power sectors. His experience is remarkably compatible with the Freedom Motors' present effort to exploit the use of its Rotapower® engine to reduce the global warming effects of methane emissions in such industrial and land use activities.

Frank G. Verbeke
Director

Mr. Verbeke is the president and founder of Alturdyne, a company that designs and manufactures engine systems for commercial, industrial, and governmental applications using gas turbine, reciprocating, and rotary engines. His professional experience includes starting Verbeke and Associates, a consulting engineering firm supporting such firms as Solar, Lear Motors, Sun Electric, Universal Electric, etc., in the application of gas turbines within industry. Mr. Verbeke has a BSME from the University of Michigan, and is a Registered Professional Engineer in California, Nevada, Oregon, Arizona, and Virginia. He is a member of several professional organizations as well as an author of various technical papers and inventor on pending patents.

Kerry Bryant
Director

Mr. Bryant has more than 25 years of successful experience in manufacturing, distribution, dealership, and retail businesses. His background in the powersports industry includes motorcycle, automotive, marine, and industrial markets. During the period of 1982 to 1993, Mr. Bryant, as Director of Sales and Marketing, helped position the SuperTrapp Industries subsidiary of Moller International as the leading and most recognized performance exhaust system/muffler provider in the world. He is currently President of Area P, Inc., a design, engineering, R&D, and manufacturing facility serving the motorcycle and automotive industry. Mr. Bryant is a graduate of MTI Western Business College with a degree in Accounting and Business Mathematics.

Company Consultants and Advisors

Mike Shanley
Strategic Advisor, China

Mr. Shanley has been a pilot since 1969, serving with the Royal Australian Air Force in Vietnam in 1971. He has been an enthusiastic supporter of Freedom Motors since its formation in 1987. Mr. Shanley holds a BA in English Literature from the University of Queensland, Australia, is the author of the novel, "Strela,". He was a magazine publisher and editor from 1987 to 1996. He is presently co-director of a security company based in the United Kingdom providing security at Heathrow, Gatwick, Manchester, and Stansted airports. His security company revenues exceed \$3m US per annum. Mr. Shanley is also Chairman of Shanley International Ltd., a company set up specifically to facilitate trade with China.

Andrew F. Burke

Dr. Burke is a foremost authority on hybrid vehicles. He has written thirteen articles on ultra-capacitors, which is an enabling technology for better hybrid vehicles. He has also authored fifteen articles on hybrid vehicles, including an essay published in the *Encyclopedia of Energy Technology and the Environment* titled "Hybrid Vehicles", published by John Wiley and Sons in February, 1995. Dr. Burke received BS and MS degrees from Carnegie Institute of Technology in Applied Mathematics, and MA and Ph.D. degrees from Princeton University in Aerospace and Mechanical Sciences. Presently, he is on the research faculty of the Institute of Transportation Studies (ITS) at the University of California in Davis.

Mike Griffith

Mr. Griffith joined the Company in 1987 as Manager of Engine Development. He earned his BS in Mechanical Engineering from the University of Saskatchewan in 1964. Mr. Griffith has a 40-year history in Wankel engine development including Program Manager and Development Engineer at John Deere's Wankel Engine Division (1984-1987), Senior Technical Specialist in the Wankel Engine Division of Curtiss-Wright (1979-1983), and Wankel Engine Project Engineer for Outboard Marine Corporation (1966-1974).

Otto Scharft

Mr. Scharft has 25 years in engine development at OMC as Group Leader in rotary engine research. He was responsible for a number of new rotary engine designs.

John Sheldon

As Director of Engineering for Techtronic Industries, Mr. Sheldon worked closely with the Company in the design, development, and testing of its 27cc rotary engine for use in hand-held power tools. Mr. Sheldon has been the Chief Engineering Manager of a number of engine development programs, including Vice President of Engineering and Business Development for Ryobi Outdoor Products, Chief Engineer at Suhner Manufacturing, and Engineering Manager at American Yard Products and Snapper Commercial Division. While at Outboard Marine Corporation as Senior Project Engineer he spearheaded the design and engineering of a line of rotary engines. OMC was the only company besides Mazda to put a rotary engine into volume production. Mr. Sheldon holds a BME from University of Minnesota and has won a number of awards in engineering. He holds 16 US patents.

FINANCIAL INFORMATION

FINANCIAL SUMMARY

Summarized in the following pages are the financial projections for the first four years of production.

KEY ASSUMPTIONS

Initial Market

To establish the first year sales volume, some assumptions were made based on market estimates and the ability to attract a portion of that market with the unique attributes of the Rotapower® engine. The domestic US commercial market has a significant volume of OEM engines in the 8 to 35 HP categories since many construction, agricultural, and utility uses have size and weight sensitive segments. During the first two years of production, however, the nature of OEM products would limit the sales of engines to these existing applications. The world market is much larger for commercial engines particularly of the 150cc series size. The recreational market has continuously evolving products, and significant sales in that area are already identified.

The beta production year sales are set at 400 engines, 200 each of the 150cc and 530cc series. It is anticipated that these engines will be sold to OEMs who have identified the Rotapower engine as a good candidate for their products.

Four-Year Sales Projection

To do the four-year projection of production and sales, a series of reasonable assumptions were made. Sales will represent 0.5% of the North American market in year four. This production level will be within the single-shift manufacturing capacity of the Company's existing critical production equipment⁴.

⁴ This rotary engine production equipment was developed by Gleason Machine Works for General Motors.

Model	BETA production	Year 1	Year 2	Year 3	Year 4
Single-rotor 150cc	200	5,000	15,000	45,000	90,000
Single-rotor 530cc	200	1,500	5,000	15,000	30,000
Twin-rotor 1060cc	0	500	2,000	6,000	10,000
Total	400	7,000	22,000	66,000	130,000

OPERATING COST:

- Royalty 5%
- R&D 5%
- Marketing 4%
- G&A 10%
- Depreciation: 7 year straight line
- Accounts Receivable Lag: 45 days
- Accounts Payable Lag: 45 days
- Inventory turns by year: 24 X's (higher if fully automated material processing is completed)
- Income Tax: 40%

The Company has entered into a 10 year technology licensing agreement with OneH2 Corporation for \$1.2 million. Additionally, OneH2 Corporation has placed an order of 26,200 engines for the first three years with an anticipation of significant increase in annual orders from year four (exceeding 100,000 engines). Furthermore, the Company has received letters of intent (LOI) to purchase over 3.5 million engines. Since these LOI are non-binding, it is reasonable to consider them as “letters of interest”. Regardless they clearly indicate the need for engines with the documented attributes of the Company’s Rotapower® rotary engine. These LOI represent potential sales of approximately \$5 billion. The Company also receives miscellaneous orders of an average of 1,200 engines every month.

In order to keep the pro-forma as conservative as possible, the following assumptions and decisions were made:

- Sales in the fifth year of production represents a very conservative 0.00058% of the world market.
- The majority of engine castings will be outsourced to companies located within the US.
- A Beta production run will minimize the financial risk prior to quantifying the actual market depth and breadth. It will also precisely establish cost-of-goods (COG).

**Freedom Motors Engine Business Plan
Baseline Projections - Pro-Forma Income Statement**

	Production Year				
	Beta Production	1	2	3	4
Sales/Revenue:					
Total Quantity	400	7,000	22,000	66,000	130,000
<u>Single Rotor 150cc</u>					
Quantity:	200	5,000	15,000	45,000	90,000
Unit Selling Price	\$ 1,020	\$ 1,020	\$ 1,020	\$ 1,020	\$ 1,020
Sales Revenue	\$ 204,000	\$ 5,100,000	\$ 15,300,000	\$ 45,900,000	\$ 91,800,000
<u>Single Rotor 530cc</u>					
Quantity:	200	1,500	5,000	15,000	30,000
Unit Selling Price	\$ 2,380	\$ 2,380	\$ 2,380	\$ 2,380	\$ 2,380
Sales Revenue	\$ 476,000	\$ 3,570,000	\$ 11,900,000	\$ 35,700,000	\$ 71,400,000
<u>Twin Rotor 1060cc (2x530cc)</u>					
Quantity:	-	500	2,000	6,000	10,000
Unit Selling Price	\$ -	\$ 3,570	\$ 3,570	\$ 3,570	\$ 3,570
Sales Revenue	\$ -	\$ 1,785,000	\$ 7,140,000	\$ 21,420,000	\$ 35,700,000
Total Sales Revenue	\$ 680,000	\$ 10,455,000	\$ 34,340,000	\$103,020,000	\$198,900,000
Cost of Goods: (1)					
<u>Single Rotor 150cc</u>					
In House Cost of Goods per Unit	\$ 77	\$ 61	\$ 57	\$ 53	\$ 50
Outsourced Cost of Goods per Unit	\$ 454	\$ 360	\$ 337	\$ 315	\$ 294
Total Cost of Goods	\$ 106,102	\$ 2,105,000	\$ 5,910,000	\$ 16,560,000	\$ 30,960,000
<u>Single Rotor 530cc</u>					
In House Cost of Goods per Unit	\$ 101	\$ 81	\$ 76	\$ 71	\$ 66
Outsourced Cost of Goods per Unit	\$ 753	\$ 585	\$ 547	\$ 511	\$ 478
Total Cost of Goods	\$ 170,880	\$ 990,000	\$ 3,115,000	\$ 8,730,000	\$ 16,320,000
<u>Twin Rotor 2x530cc</u>					
In House Cost of Goods per Unit	\$ -	\$ 127	\$ 119	\$ 111	\$ 104
Outsourced Cost of Goods per Unit	\$ -	\$ 819	\$ 766	\$ 715	\$ 669
Total Cost of Goods	\$ -	\$ 473,000	\$ 1,770,000	\$ 4,956,000	\$ 7,730,000
Total Cost of Goods	\$ 277,000	\$ 3,577,000	\$ 10,795,000	\$ 30,246,000	\$ 55,010,000
Gross Profit	\$ 403,000	\$ 6,878,000	\$ 23,545,000	\$ 72,774,000	\$143,890,000

Operating Expenses (after beta year):

5% Royalty	\$ 34,000	\$ 522,750	\$ 1,717,000	\$ 5,151,000	\$ 9,945,000
5% R & D	\$ 100,000	\$ 522,750	\$ 1,717,000	\$ 5,151,000	\$ 9,945,000
4% Marketing	\$ 200,000	\$ 418,200	\$ 1,373,600	\$ 4,120,800	\$ 7,956,000
10% G & A	\$ 450,000	\$ 1,045,500	\$ 3,434,000	\$ 10,302,000	\$ 19,890,000
Depreciation (7 year, straight-line)	\$ 219,286	\$ 955,000	\$ 1,297,857	\$ 1,719,286	\$ 2,219,286
Facilities Lease (2)	\$ 90,000	\$ 90,000	\$ 180,000	\$ 180,000	\$ 180,000
Total Operating Expenses	\$ 1,093,286	\$ 3,554,200	\$ 9,719,457	\$ 26,624,086	\$ 50,135,286
Net Income Before Taxes	\$ (690,286)	\$ 3,323,800	\$ 13,825,543	\$ 46,149,914	\$ 93,754,714
Applied Loss Carryforward (3)	\$ -	\$ 3,323,800	\$ 6,216,558	\$ -	\$ -
Taxable Income	\$ -	\$ -	\$ 7,608,985	\$ 46,149,914	\$ 93,754,714
Income Taxes @ 40%	\$ -	\$ -	\$ 3,043,594	\$ 18,459,966	\$ 37,501,886
Net Income After Taxes	\$ (690,286)	\$ 3,323,800	\$ 10,781,949	\$ 27,689,949	\$ 56,252,829

(1) Cost of Goods per Unit

Based on quantity quotes from various suppliers and expected in-house production economy of scale, the COG will decrease from 5-to-8% yearly depending on the sales increase. A 6.5% decrease is used in this analysis after the beta year.

(2) Facilities

This plan assumes much of the manufacturing is out-sourced. Lease space required will be 10,000 ft² @ \$0.75 per foot for the beta and first production year and 20,000 ft² thereafter.

(3) Loss Carry Forward:

\$9,540,358

**Freedom Motors Engine Business Plan
Baseline Projections
Cash Flow Projections**

	Beta Production	Production Year			
		1	2	3	4
Net Income	\$ (690,286)	\$ 3,323,800	\$ 10,781,949	\$ 27,689,949	\$ 56,252,829
Depreciation	\$ 219,286	\$ 955,000	\$ 1,297,857	\$ 1,719,286	\$ 2,219,286
Increase in Accounts Receivable	\$ (83,836)	\$ (1,205,137)	\$ (2,944,726)	\$ (8,467,397)	\$ (11,820,822)
Increase in Inventory	\$ (11,542)	\$ (137,500)	\$ (300,750)	\$ (810,458)	\$ (1,031,833)
Increase in Accounts Payable	\$ 34,151	\$ 406,849	\$ 889,890	\$ 2,398,068	\$ 3,053,096
Net Cash from Operations:	\$ (532,227)	\$ 3,343,012	\$ 9,724,220	\$ 22,529,447	\$ 48,672,555
Fixed Asset Purchases					
Manufacturing/Assembly	\$ (375,000)	\$ (1,800,000)	\$ (650,000)	\$ (1,000,000)	\$ (1,300,000)
Testing Equipment	\$ (50,000)	\$ (150,000)	\$ (150,000)	\$ (150,000)	\$ (150,000)
Inspection Capability	\$ (75,000)	\$ (250,000)	\$ (250,000)	\$ (150,000)	\$ (100,000)
Machine tools	\$ (250,000)	\$ (2,000,000)	\$ (500,000)	\$ (650,000)	\$ (800,000)
Tooling	\$ (750,000)	\$ (800,000)	\$ (500,000)	\$ (650,000)	\$ (800,000)
Office/Logistic Equipment	\$ (35,000)	\$ (150,000)	\$ (350,000)	\$ (350,000)	\$ (350,000)
Fixed Asset Purchase Totals:	\$ (1,535,000)	\$ (5,150,000)	\$ (2,400,000)	\$ (2,950,000)	\$ (3,500,000)
Capital Contributed	\$ 5,000,000	\$ -	\$ -	\$ -	\$ -
Net Change in Cash	\$ 2,932,773	\$ (1,806,988)	\$ 7,324,220	\$ 19,579,447	\$ 45,172,555
Beginning Cash Balance	\$ -	\$ 2,932,773	\$ 1,125,786	\$ 8,248,027	\$ 27,827,474
Ending Cash Balance	\$ 2,932,773	\$ 1,125,786	\$ 8,450,006	\$ 27,827,474	\$ 73,000,029

**Total raise is \$15 million. \$5 million used as operating capital and remaining \$10,000,000 will be used to service debt and fulfill initial setup obligations.

**Freedom Motors Engine Business Plan
Baseline Projections
Balance Sheet Projections**

	Beta Production	Year 1	Year 2	Year 3	Year 4
Assets					
Current Assets:					
Cash	\$ 2,932,773	\$1,125,786	\$8,450,006	\$27,827,474	\$73,000,029
Accts Receivable	\$ 83,836	\$1,288,973	\$4,233,699	\$12,701,096	\$24,521,918
Inventory	\$ 11,542	\$ 149,042	\$ 449,792	\$ 1,260,250	\$ 2,292,083
Total Current Assets	\$ 3,028,151	\$2,563,800	\$13,133,496	\$41,788,820	\$99,814,030
Fixed Assets, net	\$ 1,315,714	\$5,510,714	\$6,612,857	\$7,843,571	\$ 9,124,286
Total Assets	\$ 4,343,865	\$8,074,514	\$19,746,353	\$49,632,931	\$108,938,316
Liabilities					
Long Term	\$ -	\$ -	\$ -	\$ -	\$ -
Accounts Payable	\$ 34,151	\$ 441,000	\$1,330,890	\$3,728,959	\$ 6,782,055
Total Liabilities	\$ 34,151	\$ 441,000	\$1,330,890	\$3,728,959	\$ 6,782,055
Shareholder Equity					
Paid in Capital	\$ 5,000,000	\$ 5,000,000	\$ 5,000,000	\$ 5,000,000	\$ 5,000,000
Retained Earnings	\$ (690,286)	\$ 2,633,514	\$13,415,463	\$40,903,433	\$97,156,261
Total Shareholder Equity	\$ 4,309,714	\$7,633,514	\$18,415,463	\$45,903,433	\$102,156,261
Total Equity and Liabilities	\$4,343,865	\$8,074,514	\$19,746,353	\$49,632,391	\$108,938,316

APPENDICES

Appendix A: Product Considerations

Appendix B: Industry and Government Comments Related to Rotapower Engine Technology

Appendix C: Letters of Intent to Purchase Rotapower Engines

PRODUCTION CONSIDERATIONS

PRODUCT LIFE CYCLE

With the advantages of the Rotapower® engine, and the size and needs of the existing internal combustion engine market, the Company sees a great opportunity for its engines. The Rotapower® engine will be the first low emissions, low cost Wankel based engine to enter the recreational and commercial markets. Existing proprietary technology and specialized production equipment give the Company a strong long-term advantage with an immediate 3 to 5 year lead over anyone else entering this market. Periodically, one hears of engine designs (Rand-Cam and Split-Cycle, for example) that offer an unproven large list of advantages. Even if these designs had some merit, the cost of bringing them to a proven design is enormous. For example, the Wankel type engine has undergone approximately \$3 billion in development costs over the last 30 years with nearly 2,000 patents being issued. Despite being a fundamentally winning design, only now, driven by emerging emissions standards does the Rotapower® engine have a powerful entree into the general engine market.

ENGINE MANUFACTURING CAPABILITY

The Company has acquired the unique rotary engine production equipment built for General Motors. This equipment has capability of producing over 100,000 parts per year on one shift. Leveraging years of design and production experience of the management team, the Company anticipates that it will have the following unique start-up advantages.

- Outstanding engine assembly and inspection facilities
- Experienced gear-box design capability
- An outstanding rotary engine featuring:
 - Roller ball bearings
 - Injection lubrication
 - Only two moving parts
- A facility with three dynamometers available to qualify each engine being produced
- Years of experience in interfacing engines and generators

QUALITY CONTROL

The establishment of a quality assurance program with mutual participation by design, engineering, manufacturing, and marketing will be critical to getting the engine production right. Wankel type engines are not new. They have been in use long enough without having a major impact that the Rotapower® engine must be able to meet all the performance and durability criteria from the beginning.

Given this need to reinforce credibility, the integration of quality into every aspect of the engine life cycle will be essential. The engine design must address ease of manufacture, assembly, installation, and repair in addition to the traditional concerns for performance and durability. Having the manufacturing, marketing, and service people involved as early as the plan indicates will do much to ensure that all these issues are integrated.

MANUFACTURE OF COMPONENT PARTS

The casting industry is highly competitive with an overcapacity in many parts of the U.S. There are no unique long block components in the engine that cannot be finished in house. The only critical operating component that must be purchased outside is the rotor bearing, which has a significant lead-time because it is custom built for the Rotapower® engine. All other external components or accessories are readily available.

Manufacturing Status of Rotapower® Engine Production

Rotor Displacement	27cc	125cc/150cc	530cc	650cc
Design	Single rotor	Single and twin rotor	Modular – one to nine rotors	Single and twin rotor
Rotor cooling	Parallel	Thru	Parallel	Thru
Housing Cooling	Air	Air or liquid	Liquid	Liquid
Lubrication	Oil/fuel mix	Injection pump	Injection pump	Injection pump
Accessories	Off the shelf	Off the shelf	Some custom	Some custom
Present castings	Rapid prototype	Sand	Sand	Sand/Lost foam
Production castings	Die cast	Die cast/lost foam	Permanent mold/Lost foam	Permanent Mold/Lost foam
Present Rotor Housing Coating	Nickel-sil	Chrome Carbide	Chrome Carbide	Chrome Carbide
Production RHC	Nickel-sil	Nickel-sil	Iron-moly	Iron-moly
Side Seal Slots	Milled	Milled/Shaped	Shaped	Shaped
Rotor Bearings	Off the shelf	On order	On order	On order
Other Bearings	Off the shelf	Off the shelf	Off the shelf	Off the shelf
Present End Housing Coating (depends on life)	Nickel-sil	Chrome Carbide	Chrome Carbide	Chrome Carbide
Production End Housing Coating	High silicon	High silicon	High silicon or Iron-moly coating	High silicon or Iron-moly coating
Power (Depends on porting and number of rotors)	2.5 hp	10-50 hp (1-2 rotors)	35-390 hp (1-6 rotors)	120-300 hp

MAINTENANCE

Rotapower® engines are capable of being recycled quite easily. In actual practice, it is expected that only the apex seals will be replaced after operating for more than 10,000 hours.

The wear surfaces, when coated with chromium carbide, appear to have an indefinite life but have not undergone any continuous test approaching 10,000 hours. This is also true of the roller bearing. OMC engines ran accumulatively for millions of hours without any bearing weakness. The Rotapower® engine uses ground race main bearings versus drawn cup bearings in the OMC engine. The rotor bearing used in the Rotapower® engine is designed for a much longer life than that used in the OMC engine.

Historically the longest running internal combustion engine was a Wankel Rotary Engine designed by Curtiss-Wright for Ingersoll Rand. Three hundred engines ran for an average of 34,000 hours without an overhaul. One engine ran for over 90,000 hours.

The bulk of the major parts, consisting of the rotor housing, side housings, rotor, and crankshaft are expected to operate for several thousand hours before being recycled.

INDUSTRY AND GOVERNMENT COMMENTS RELATED TO ROTAPOWER ENGINE TECHNOLOGY AND IT LEADERSHIP

NASA Scientific and Technical Information (STI):

“An innovation from Moller International of Davis, California will make engines cleaner and more efficient. Through Small Business Innovation Research (SBIR) funding from NASA’s Glenn Research Center, the company created a new coating for rotary engines used for industrial application, watercraft, and other performance-demanding machines. These coatings significantly improve the fuel consumption of a vehicle while reducing emissions. The new coatings are offered in the new Rotapower® engine, which is produced and distributed by [Moller’s exclusive licensee], Freedom Motors. It is this innovative coating that allows the Rotapower® engine to function smoother than other models, reducing wear and protecting the engine. Incorporating NASA technology into the Rotapower® engine gives it the ability to run cleanly and efficiently on a variety of fuels.”

GE comments regarding the Rotapower engine technology:

General Electric Aerospace, in a brochure published and distributed to potential users of the Rotapower engines in Unmanned Aerial Vehicle (UAV) applications, made the following statement in late 1992:

“GE Aerospace has recently teamed with Moller International of Davis, California, a leader in Wankel engine technology. Moller’s engine technology, in combination with GE’s aerospace integration and manufacturing experience, provides the UAV platform with a state-of-the-art heavy fuel engine from a high quality domestic supplier”

Moller developed a two-rotor 750cc/rotor Rotapower® engine under a multi-year, multi-million dollar contract. The engine was successfully tested, including running on heavy fuel (diesel). Unfortunately, reductions in defense spending resulted in termination of the UAV in which this engine was intended to be used.

NASA Lewis conclusions regarding Moller’s patented use of a composite coating (Duplex PS212/PSZ) for engine applications:

“Duplex PS212/PSZ coatings are expected to be an enabling technology.”

“Concept is applicable to other Wankel engine applications and possibly to other engine types as well.”

“Advantages derived are higher specific power, longer life, and lighter structure.”

“The combination of the thermal barrier and wear coatings was established as a sound principle and has wide application.”

New York City Village Voice website (www.villagevoice.com);

Dr. Dennis Bushnell, Chief Scientist at NASA's Langley Research Center, Virginia stated that "Paul Moller is one of the finest engineers in the country."

Dr. Andrew Burke, Institute of Transportation Studies, University of California, Davis:

On the use of a rotary engine in hybrid electric vehicles:

- "Small size of the rotary engine makes packaging much less difficult than with a reciprocating engine"
- "The cost of the rotary engine in volume production should be less than other engine types"
- "Two-cycle engine size and cost, with 4-cycle engine efficiency and low emissions"
- "Rotary engines are smooth and quiet compared to other engine types"

Dr. Burke's Comments specifically on the Rotapower® rotary engine:

- "Paul Moller and Moller [International] have been leaders in the development of the modern rotary engine since 1985"
- "The Moller [Rotapower® engines] are superior to the Mazda engines in several respects: rotor cooling, lubrication, [reduced] engine friction, and rotor surface coating"
- "Emission tests of Moller Rotapower® engines have shown the capability to meet California ULEV standards in vehicles without exhaust after-treatment"
- "Some advanced features of the rotary engine patented by Moller International have the potential to increase efficiency of the engine to over 40%" (conventional piston ≈ 30%)

Dr. Burke is considered the resident expert on hybrid cars at ITS-UCD.

Freedom Motors website (www.freedom-motors.com):

Freedom Motors, the exclusive licensee for the production and distribution of the Rotapower® rotary engine announced that it has successfully demonstrated exceptionally low emission levels of its rotary engine to members of the California Air Resources Board (CARB) and Bluewater Network... During the test observed by officials of both organizations emissions levels of the engine under test and operated at power and RPM levels prescribed by the US Environmental Protection Agency (EPA), were significantly below the Federal and California State's projected levels beyond the year 2008.

Dr. John Zuk, Chief, Advanced Plans and Programs, NASA Ames:

Dr. Zuk states "Moller is different. He's got academic credentials. He's thorough."

APPENDIX C

LETTERS OF INTENT TO PURCHASE ROTAPOWER ENGINES

COMPANY	APPLICATION	CONTACT	TITLE
Air Conception Group SRSI*	Recreational	Laurent Fourgeaud	CEO
Anchor Industries	Marine	Tom Houle	President
Asha Enterprises	Industrial	V.N. Jerajani	General Manager
Berkut*	Automotive	Ivica Zafirowvski	
Bert Hovercraft, Inc.*	Hovercraft	Wayne Bert	President
C3 Powersports*	ATV	Kevin Forsyth	President
Dersch Motorcycles*	Motorcycle	Hans Dersch	Founder
EarthCo Motors	APU/Hybrid	John Ostgaard	President
Electric Environmental Vehicles	Auto	Nelinia Henry	Vice President
FEV, Inc	Generator	Bruce Olson	Senior Engineer
Flarecraft Corporation	Marine	William Russell	President
Gibbs Sports Amphibians	Marine	Mark Brady	Manager
Hovercraft America Inc.	Hovercraft	Art Phenicie	
JBL, LLC	Industrial	Jerry Rusnak	General Manager
Leisure Industries	Marine	Gary Rutherford	President
Moholland*	ATV	Tom Moholland	President
Motive Industries*	Hybrid	Nathan Armstrong	Chief Engineer
NB Waterwerks*	PWC	Timothy Davis	Founder
Pinnacle West Corp*	Co-Generator	Timothy McDonald	Manager
Power Canoe, Inc.	Marine	David Ogren	President
Proton, Hybrid and Green Propulsion Div*	Automotive	Joseph Ebrahmian	Division Manager
Puzey Motorcycles*	Motorcycles	Mike Puzy	President
Raptor Technologies	Automotive	Monty LeBlanc	President
Reimers and Associates, Inc.*	Generator	Mark Reimers	Founder
Revolution Motors*	Hybrid	Ben Werner	CEO
Romarc Industrial Corp*	Hovercraft	Louis Chia	Chairman and CEO
Shockwave	Marine	Ron Rigon	President
Stealth Performance Corp.	Marine	Michael Hector	Marketing Director
Superior Hovercraft, Inc.	Hovercraft	James C. Stewart	CEO
Visionary Vehicles	Hybrid	Malcolm Bricklin	President
VS Technology Corp*	Hybrid	Michael Van Steenburg	CEO
VSG*	Generator	George Theofanis	President
W. S. Darley*	Pumps	Paul Darley	President
Yarovit Motors*	Automotive	Alexander Sinkevich	Manager

* Denotes requests that are more current.

The following companies have provided letters of intent (LOI) for a very substantial number of engines:

Alturair, Frank Verbeke, President, (619) 449-1570. Alturair (www.alturair.com) manufactures engine-powered generators that range from 8 Kw to 25 Kw. The Company has received a letter of intent (LOI) to purchase 55,000 engines to be delivered over the next five years.

ALIFE (Artificial Life Source), Devan Nair, CEO, 011-65-6659008. ALIFE (www.alife-air.com) has a division that manufactures motor scooters and motorcycles, and intends to produce a hybrid fuel-electric hybrid automobile. It has provided the Company with a LOI for 3,400,000 engines to be delivered over the next four years. ALIFE is providing \$750,000 to the Company to support the integration of its Rotapower® engine into ALIFE's motor scooters, motorcycles, and hybrid cars.

OneH2 Corporation, Paul Dawson, CEO, (844) 996-6342 X701. OneH2 (www.oneh2.com) holistic, end-to-end solution guarantees the production, delivery, and monitoring of zero-emission hydrogen fuel. This fuel is used to power forklifts and trucks for companies across all major industries. Hydrogen production as a service and the option of quick and easy refueling, makes their revolutionary hydrogen power distribution system a true game changer. OneH2 has a 10 year licensing agreement with Freedom Motors and has placed an initial order of 26,200 engines for the first 3 years to operate on hydrogen fuel to generate power to charge the onboard batteries on forklifts and trucks.

Vodik Labs, Carey S. Hilton, President & CEO, (817) 307-1385. Vodik Labs (www.vodiklabs.com) has a global footprint in storage of hydrogen as a fuel. Hydrogen works particularly well in the rotary engine. Vodik has provided the Company with a LOI for 400,000 engines to be delivered over the next three years.

Viridis Global, LLC, Gary W. Baer, CEO, (303) 817-6904. Viridis Global is preparing to produce a family of engine/generators ranging from 20 Kw to 200 Kw. This power range matches single- and multi-rotor models of our 530cc displacement rotor engines. Viridis Global has provided the Company with a LOI for 600,000 engines to be delivered over the next five years.

The Company has numerous LOI for 5,000 to 15,000 engines and substantially more for 500 to 5,000 engines with delivery to take place over varying periods. Many of the requests are for applications where the competing product is very expensive. For example, a 150cc Axiro rotary go-kart engine with a short life sells for \$5,480 while the Company's much longer life engine can be sold profitably for \$960. A 100 hp Rotax 4-stroke piston engine used in the homebuilt and sport aviation industry sells for over \$18,575, while the Company's twin-rotor 530cc per rotor engine can be sold profitably for \$3,360.

Therefore models of the Company's 150cc and 530cc engine adapted to various special markets could command a three-to-five times premium price over that for its basic engine. Any modifications required would be quite modest.

LOI received to date total over 3 million engines.