Freedom Motors, Inc.

Project Overview

Abstract

Experience the power of freedom!
Freedom Motors is a prominent OEM company primarily focused on developing world class rotary engines to mitigate carbon emissions, provide an alternative technology to promote hydrogen fuel and hybrid vehicles and significantly change the world of air, water, and ground transportation.

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Executive Summary

Freedom Motors began development of its revolutionary Rotapower® engine following the acquisition of the entire rotary engine assets of Outboard Marine Corporation (OMC) and General Motors (GMC). Both companies had developed rotary engines based on the Wankel design. After spending an estimated $1.5 billion (in concurrent expense, not adjusted for subsequent inflation) these companies found that this unique engine with its many outstanding characteristics had one serious flaw of consuming more fuel than a good four-stroke piston engine. It was determined that this limitation was due to its inherently slow combustion process. Consequently, substantial energy was being lost in the exhaust gases. There were also problems with high pollutant emissions and engine seal failure.

Our continuous and focused development along with extensive additional research and testing resulted in the Rotapower® engine having the following attributes:

- Power to weight ratio over three times higher than the lightest 4-stroke piston engine currently available in the market.
- Power to volume ratio that is nine times higher than the lightest 4-stroke piston engine currently available in the market.
- Has only two moving parts versus twenty-four in a 4-stroke piston engine.
- Carbon neutral when consuming numerous fuels like methanol and ethanol and carbon free with hydrogen and ammonia.
- Freedom of vibration
- Modular design allowing additional short blocks to be bolted together as a simple way to create higher power models
- Documented seal wear surfaces life of over 20,000 hours (ten-fold improvement)
- Able to burn contaminated biogas, a major contributor to global warming (contaminated biogas destroys a piston engine)

Freedom Motors' further research produced a patent pending design by compounding (5-stroke) the engine whereby exhaust energy was used to supercharge it while also providing power directly to the output shaft, resulting in additional attributes such as:

- Potential 20% decrease in fuel consumption.
- 50% reduction in exhaust temperature
- 95% reduction in noise which is particularly important in an air taxi which must operate within the city.

Freedom Motors has developed a family of Rotapower® engines ranging from 2.5 to 450 horsepower that have been integrated and demonstrated in a wide variety of applications. These engines typically have about one-third the weight and one-sixth the volume of reciprocating engines of comparable horsepower.

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The Team

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, Director

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.

Jack Stewart

Public Relations Manager

Mr. Stewart has over 20 years of experience managing public relations for several companies. These include Marketing/Communications Manager for DG Systems Inc, Marketing Events Manager for Arthro Care Corporation, and Worldwide Marketing Events Manager for Zhone Technologies Inc. Mr. Stewart holds a Bachelor of Arts Degree, College of Communications and Information Studies from California State University and a Master of Business Administration (MBA) from Keller Graduate School of Management, DeVry University.

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.

Dr. Shankar Yalamanchili, MD (Dr. Chili)

Director

Dr. Chili is a Board Certified Psychiatrist, specializing in geriatric and adult psychiatry. He attended medical school at Kasturba Medical College in Manipal, India. His residency was completed at University Hospital in Stony Brook, NY from July 1999 to June 2003. Additionally, Dr. Chili completed a Geriatric Psychiatry Fellowship at Western Psychiatry Institute and Clinic in Pittsburgh, PA from December 2003 – December 2004. Dr. Chili's primary practice is devoted to inpatient care and telepsychiatry services. As the owner of Alabama Psychiatry, Dr. Chili develops business interests for the company and strives to reach out to many providers of mental health services to positively impact wellness among this patient population. Dr. Chili is committed to improving the care of patients with mental health illnesses. Special focus is placed on those who are uninsured or who reside in underserved communities. Dr. Chili believes mental health services are more effective if collaborative efforts are employed by using psychiatrists in conjunction with medications and therapy by mental health providers.

Dr. Gurminder Singh Khalsa

Strategic Advisor

Gurminder Singh Khalsa is a scientist, technologist, entrepreneur, private and investment banker with 30+ years' experience. He has worked with numerous technology companies with an emphasis on green technology. He has led technology underwriting, private investments and brings unique insights and creative solutions to business design and capital formation.

Gurminder Singh Khalsa Co-Chaired the International Green Technology Institute, an initiative of the Tom Bradley Legacy Foundation at UCLA, created various programs such as the Green Technology Leadership Lecture Series, the Green Technology Entrepreneurial Forum, the Green Technology Global Expo, and Conference.

He was Co-Founder, President and CTO of Transformative Capital, a technology, financial and strategy advisory firm. Transformative Capital engaged with various hedge and private equity funds in some $140 Billion of green energy investments, including solar, wind, CNG, hydrogen, hydrokinetics, geothermal, biomass and other new forms of integrated energy production.

Dr. Anjan Bose

Strategic Advisor

Dr. Bose is a distinguished Professor of Electric Power Engineering at Washington State University. As holder of this professorship endowed by the power industry, he provides leadership of research and teaching in this area; this includes site directorship of the multi-universe NSF Power Engineering Research Center. He is Senior Advisor to the Department of Energy, and he Chairs the "G-Tech Team," which coordinates all electrical grid-related activities across the different DOE offices on behalf of the Under Secretary. He is also Senior Advisor to the Federal Energy Regulatory Commission (FERC). Dr. Bose has a M.S. and a PhD in Electrical Engineering.

Sudheer Kuppam

Strategic Advisor, Investment

Mr. Sudheer Kuppam is the founder and Managing Partner of Epsilon Venture Partners, a Hong Kong-based venture capital firm, which makes investments across the APAC region in the technology sector. He currently sits on the boards of Pi Datacenters, INCX, FarmTaaza, Ubiix, and Zebi. Over his career, Mr. Kuppam has been a strategic advisor or board member for many companies across Asia. Before founding Epsilon Venture Partners, he spent over 18 years at Intel Corporation, most recently, as a Vice President and Managing Director of Intel Capital for the Asia Pacific (ex-China) region. Under his leadership, his 13-member investment team deployed over $590 million capital in technology companies. Mr. Kuppam has experienced as manager multiple exits across Asia, spanning both IPOs and M&A, and he is cofounder of Pi Datacenters, Zebi, INCX and Exatron. He assisted Zebi and INCX to complete their ICOs and raise funds in the blockchain space. Mr. Kuppam has a B.S. degree from the Indian Institute of Technology, Madras and a M.S. degree from Rensselaer Polytechnic Institute.

Naveen Madishetty

Strategic Advisor for Sustainability in India

Mr. Naveen Madishetty is the regional head for India Chamber of Commerce. He is also the green policy advisor to the World Academy of Arts & Sciences and a recognized world leader in sustainability and green business. Mr. Madishetty's core expertise is in design, development, commercialization, and policy in green technologies. He recently received the prestigious EU-India "Young Leaders Award" at the EU parliament in Brussels. He was also nominated to TWAS (The World Academy of Sciences) engineering science prize in 2018, in Italy. In the last decade, Mr. Madishetty has played a key role in many green technologies in the fields of biogas, solar, and other renewable energies. He founded Chakragreen solutions, in India, which dedicates itself to promoting green and

clean technologies. Mr. Madishetty holds a B.S. in mechanical engineering from VTU in India and a M.S. in environment process engineering from Stuttgart University in Germany.

Rajat Negi

Strategic Advisor, India

Mr. Rajat Negi is an Indian entrepreneur, co-founder and Director of Hbar Marketing Services India Pvt Ltd (HMS), a marketing & consulting services company. He leads a team of professionals from marketing and IT background who deliver ideas, from strategy to activation to execution, working as outsourced marketing & sales arm of various organizations. HMS's client list includes American Express, AT&T, Canon, Citibank, Discovery, ESPN, Hyundai, HP, Honda, Mitsubishi, Turner, and United Nations. Mr. Negi has a B.S.in Engineering Electronics and Communications from College of Engineering, Osmania University.

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 1997. Mr. Shanley holds a BA in English Literature from the University of Queensland, Australia and is the author of the novel, "Strela". Mr. Shanley is also Chairman of Shanley International Ltd., a company set up specifically to facilitate trade with China.

Key Consultants (Rotary Engine Experts)

Mike Griffith

Mr. Griffith joined Freedom Motors in 1987 as its 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).

John Sheldon

Director of Engineering, Techtronic Industries-in this capacity, Mr. Sheldon worked closely with Freedom Motors 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 several engine development programs, including Vice President of Engineering and Business Development for Ryobi Outdoor Products, Chief Engineer at Suhner Manufacturing, Engineering Manager at American Yard Products and at 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 numerous awards in engineering. He holds 16 US patents.

Otto Scharft

Mr. Scharft has 25 years in engine development at OMC where he worked for over 10 years as Group Leader in rotary engine research. He was responsible for multiple new rotary engine designs.

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Company Structure

Freedom Motors (FM) was formed in 1997 as an engine division of Moller International, in the state of Nevada, USA, and it acquired the intellectual property and physical assets of Outboard Marine Corporation (OMC) and of Infinite Engine Company (IEC), the physical assets of General Motors Company (GMC) Rotary Engine business and all assets. and all assets of Infinite Engine Company (IFC).

In 2001, all physical assets, intellectual property related to rotary engine technology of Moller International were transferred to Freedom Motors and it became an independent corporation Freedom Motors is a corporation in good standing in the State of Nevada.

At incorporation, FM issued a total of 50 million common shares and 20 million preferred shares. No preferred shares have been issued. To date FM has issued 43,538,337 common shares (non-diluted).

FM is estimated to have spent $65 million on developing this technology to the point of making it commercially viable. $50 million was initially raised for acquisition of OMC (Outboard Marine Corporation), GMC (General Motors Corporation Rotary Division) and IEC (Infinite Engine Company) assets, with the aim of improving the initial technology to be airworthy for the UAV and PAV applications. Further advancements were made by raising additional $10 million and $5 million of this total of $65 million in investment were revenues and contracts that were reinvested to continue the development.

Out of the initial $50 million investment, the majority of it (over $30 million) came from Dr. Moller's SuperTrapp Industries sales, royalties, and acquisition proceeds as well as the proceeds from the Davis Research Park development.

In January 2019, FM sold 70, 906 common shares for $1.50 each under regulation crowdfunding (as enabled by JOBS Act of 2012). This financing implied a pre-money valuation at that time of $66 million. To be sure, the implied value of any historical financing does not validate any present valuation.

The majority shareholder of Freedom Motors (51.1%) is Dr. Paul Moller (President and CTO of FM).

Currently, FM has a board of 8 directors and 6 strategic advisors.

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Past Acquisitions

Freedom Motors (FM) was formed in 1997 as the engine division of Moller International. It was organized as a corporation in the state of Nevada, USA.

In 2001, all physical assets and intellectual property related to rotary engine technology of Moller International were transferred to Freedom Motors and it became an independent corporation.

General Motors Corporation (GMC)
GMC developed a rotary engine for two of their automobile models. Unfortunately, around 1975, it was hit with two crises. One was the lack of fuel at that time, and the rotary engine was less fuel efficient than the piston engine. The second was the emphasis being placed on emissions, and the rotary engine had higher emissions than power-equivalent piston engines. GMC had spent over $500 million (well-documented at that time) on R&D and tooling to produce their proprietary rotary engine. Faced with the above two problems, GMC decided to drop the program. GMC's tooling was supplied by Gleason Machine Works. In FM's recent contact with Gleason Machine Works, its manager stated that the three major machines that FM acquired, which are essentially new, would cost over $7 million to replace. This equipment allowed FM to be the only company outside Mazda Motors to completely overhaul Mazda rotor housings.

Outboard Marine Corporation (OMC)
The OMC general manager of the rotary engine program stated that OMC spent about $250 million developing rotary engines for their snowmobile and the outboard motor markets. OMC was the largest manufacturer of outboard motors in the world. The snowmobile engine went into production. The outboard engine was about to be produced when the company was acquired by Bombardier in Canada. Bombardier was already a major producer of engines and saw no justification to produce rotary engines. As a result, FM was able to acquire the complete production manufacturing details and rotary engine inventory held by OMC. FM is the only supplier of rotary engine parts for the OMC snowmobiles.

Infinite Engine Company (IEC)
IEC gave FM a $2 million contract to develop a rotary engine for an unmanned aerial vehicle (UAV) client. FM's contract with IEC exclusively licensed engine production and required IEC to meet certain sales levels. IEC mismanaged the program with their major client, General Electric Aerospace. As a result, IEC was not able to meet the sales level they were obligated to meet. FM was able to show in court that IEC was guilty of mismanagement and as a result, IEC, a public company, was forfeited to FM. It is estimated that IEC spent approximately $25 million putting FM's designed engine into production.

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Core Technology

Freedom Motors and its technology partner, Moller International, together hold 12 engine related mechanical patents, five design patents in total and many other technological patents making up to 49 in total. Patents are under Dr. Paul S Moller's name.

All these patents have expired, but FM possesses many trade secrets, and it has eight patents in process or ready to be processed.

Features:

Fewer Moving Parts

- There are only two moving parts in a single rotor engine. Compares to seven parts for 2-stroke and 25 parts for a 4- stroke piston engine with a similar instantaneous output torque.
- Charge or air-cooled rotor design eliminates many engine components typical of existing rotary engines.
- Can be disassembled and reassembled in less than 30 minutes.
- Fewer moving parts means longer life and lower direct and indirect costs of upkeep.

Reduced Fuel Consumption

- Specific Fuel Consumption <0.43 lb./HP-hr. ~. Expect <0.35 lb./HP-hr. from a compound (5-stroke) version that extracts residual energy from the exhaust based on NASA predictions and test results to date.
- Compares to 0.65 lb./HP-hr. for the average 2-stroke and ~ 0.35 lb./HP-hr. for the best 4-stroke piston.

Very Low Emission Levels

- Carbon Monoxide (CO) and unburned hydrocarbon (HC) emissions are two orders of magnitude better than those of a 2-stroke engine, and one order of magnitude better than many industrial or commercial 4-stroke piston engines.
- NOx emissions much lower than 4-stroke piston engines, similar to 2-stroke engines.

Proven Multi-Fuel Performer

- Demonstrated on gasoline, natural gas, methanol, ethanol, propane, spark-ignited diesel, kerosene, and jet fuel. Methanol and ethanol represent the ideal fuels for the Rotapower® engine, as to horsepower and torque output, cooling characteristics, fuel economy and environmental effects,
- Prototype underway with hydrogen as fuel

Low Vibration Levels

- Perfect radial balanced allows rigid mounting, which can become an integral part of the chassis.
- Instantaneous torque characteristics identical to 6 cylinders 4-stroke piston engine (two-rotor model).

Modular Design

- Stacking of rotors easily extends range of available power.

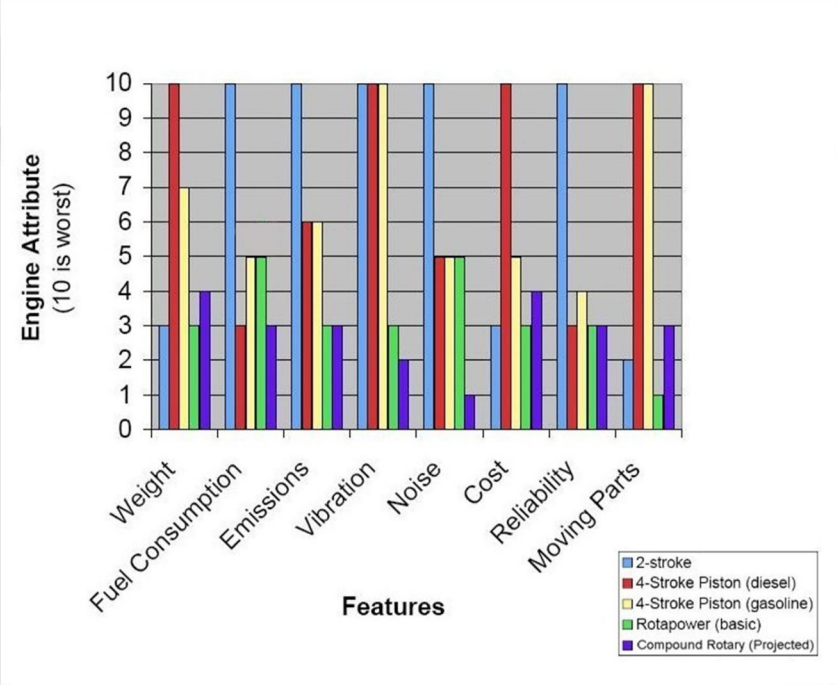
Fuel Consumption Comparison

Engine Type	Specific Fuel Consumption (SFC)***	
	LB per hp-hr	Grams per kw-hr
2-Stroke recreational piston engine	0.65	395
Mazda rotary engine	0.52	316
OMC rotary engine	0.6	365
4-Stroke commercial piston engine	0.45	274
Rotapower rotary – carbureted	0.43	262
Rotapower rotary – direct fuel injection	0.4	243
Toyota 1NZ-FXE piston engine	0.31	188
Rotapower rotary – compound (5-stroke) version (Projected)	0.31	188

*****The SFC of Rotapower compound (5-stroke) engine for Methanol is 0.7 LB per hp-hr, ethanol is 0.54 LB per hp-hr and propane is 0.49 LB per hp-hr.**

Reference: 1 gallon of methanol is 6.6 lbs., 1 gallon of ethanol is 7 lbs., 1 gallon of gasoline is 6 lbs., 1 gallon of propane is 4.11 lbs., and 1 gallon of hydrogen is 0.5906 lbs. (1 Kg of hydrogen is 2.2 pounds and 1 Standard Cubic Foot of hydrogen gas is 0.005209 pounds).

Rotapower® Improvements to Extend Engine Life



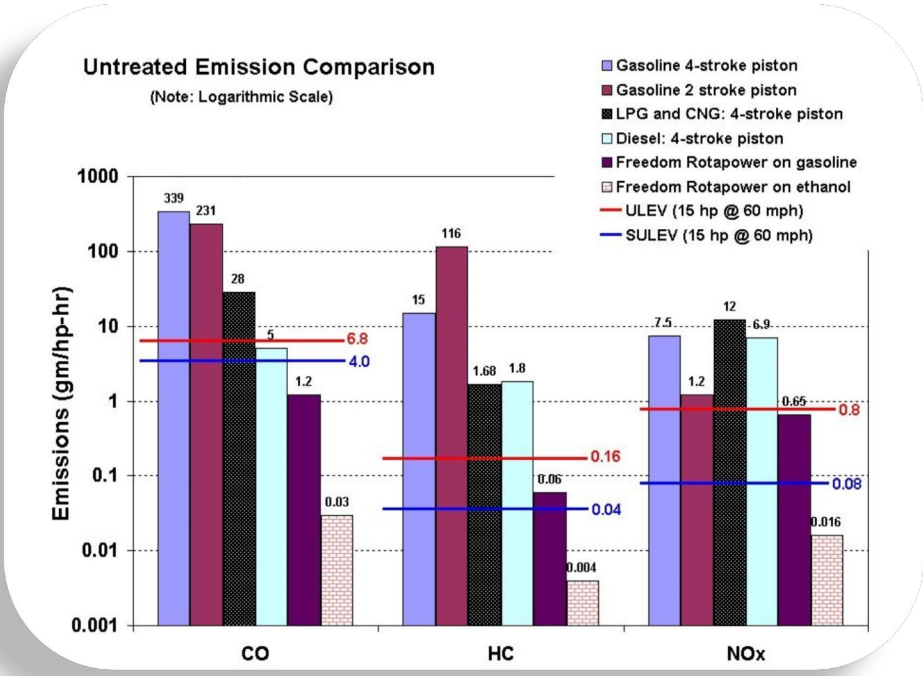
- Freedom Motors incorporated patented improvements into its designs:
  - Parallel cooling for rotor (Patent #5413877).
  - Unique oil injection and lubrication system (Patent #6325603).
  - Complimentary cooling towers (Patent #6164942).
- Cooling approach eliminated end-loading the roller bearing and side-thrust on the rotor.
- Lubrication patent placed lubricating oil precisely where it was needed.
- Trade secrets to be implemented in production:
  - 20,000+ hour life seal and wear surface life.
  - Rotor housing grind finish eliminates need to lap housing.
  - Lower cost plasma coatings for rotor housing.
  - Lubricating oil uniquely able to address the needs of the Rotapower® engine.

Rotapower® Improvements to Reduce Fuel Consumption and Emissions while Increasing Power

- Unique intake port arrangement of fuel/airflow and airflow that leads to a 15% increase in power and a 4% reduction in fuel consumption in the 4-stroke Rotapower® engine.
- Fuel/air intake timed by rotor position so that the charge enters the intake stroke near the leading edge of the rotor creating a stratified charge. Results in a 15% reduction in fuel consumption and near-zero toxic emissions.
- A specific combination of engine displacement, engine RPM and brake mean effective pressure (BMEP) that allows the Rotapower® engine to operate on the Otto cycle while using diesel fuel.
- One-way airflow valve with very low-pressure loss.
- Compound version (5-stroke) of the Rotapower® engine that increases power by up to 50%, reduces exhaust noise by over 90%, reduces exhaust temperature by nearly 50% and reduces fuel consumption by over 20%.

Rotapower® Engine Emissions

- Tests carried out in conjunction with the Institute of Transportation Studies (ITS) at the University of California at Davis as witnessed by members of the California Air Resources Board (CARB).
- The Rotapower® engine using gasoline as a fuel achieved hydrocarbon, carbon monoxide, and nitrous oxide emission levels well below those required to meet the Ultra-Low Emission Vehicle (ULEV) standards for California.



- This was accomplished without exhaust after-treatment (catalytic converter) which had not been previously achieved with any other engine technology.
- Using ethanol resulted in emissions well below the Super Ultra Low Emission Vehicle (SULEV) California standards again without exhaust after-treatment.

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5-Stroke Engine & Additional Patents

The 4-stroke Rotapower® engine's fuel consumption is very competitive with a standard commercial 4-stroke piston engine. Many years of development and thousands of hours of dynamometer testing led to six Rotapower® engine patents now in process and several more planned. By forcing the exhaust gases to go through a second expansion stroke, much of previous lost exhaust energy was recovered. This fifth stroke was accomplished with the addition of only one moving part.

This additional stroke (second expansion stroke) achieved the following:

- Recovered exhaust thermal and pressure energy in the form of mechanical energy resulting in a potential 25% reduction in fuel consumption when fully optimized. This reduction in fuel consumption will make

the 5-stroke Rotapower® engine better fuel efficient that the best turbo-charged automotive piston engine.

- Reduced the exhaust exiting pressure, which is the chief source of engine noise. The unmuffled noise was reduced by 24 dBA (94% reduction)
- Cooled the exhaust gases from 1600°F to between 800°F and 950°F.

The following Table compares the Rotapower engine with one of the lightest and smallest four-stroke piston engine (Rotax 912 ULS) per horsepower.

Engine Type	Rotapower® (5-Stroke)	Piston (4-Stroke)	Rotapower® (4-Stroke)
Model	530-1C	Rotax 912 ULS	530-1
HP/lb.	160/60 = 2.67	100/114.8 = 0.87	125/40 = 3.13
HP/Ft^3	160/1.2 = 133	100/2.9 = 34.5	125/0.9 = 139
Price per HP	$85	$196	$50
Radial Vibration	None	Significant (4 cyl.)	None
Exhaust Temp	800°F to 950°F	1,400°F	1,600°F
Unmuffled Noise	85 dBA (94% less)	106 dBA	109 dBA
Maximum RPM	9,000 RM	5,800 RPM	9,000 RPM
Specific Fuel Consumption	0.35 lb./HP.Hr	0.36 lb./HP.Hr	0.40 lb./HP.Hr

Here is a list of all patents in progress:

Freedom Motors (FM) did not file for any new patents in the last few years. It was strategically planned to address

- The research and development of additional ways to extend the engine life, improve fuel efficiency, and increase power output, which has led to several additional claims to be patented.
- The mass manufacturing that was planned to occur only after significant and satisfactory improvements in critical areas like fuel efficiency and power output.
- The US and worldwide patents which takes significant time, funds, and human resources. FM planned to raise funds for manufacturing and patenting at the same time.
- FM technology that has resulted in several patents and can be said with complete confidence based on Dr. Moller's experience where over the years he has applied for and received over 15 patents, and never had a patent application rejected.
- The previous patents to ensure they are usually combined with our trade secrets, so it becomes extremely hard to replicate by third parties, to realize the full potential in rotary engines.
- FM's numerous trade secrets without patenting as they are very sensitive and can't be reverse engineered. For example, FM uses a mixture of Shell Rotella oil and other materials for metered lubrication (patented technology). The oil mixture that goes into the engine during expansion and compression cycles has a secret recipe that will be kept as trade secret. Similarly, there are many other trade secrets.

The following is a brief description of patents that with adequate funding would be applied for following modest additional testing to further maximize the number of claims.

- A specific combination of engine displacement, engine RPM and brake mean effective pressure (BMEP) that allows the Rotapower® engine to operate on the Otto cycle while using diesel fuel. This allows the engine to avoid the complexity, cost, and size of the fuel system normally needed to operate on diesel fuel. Since in this patentable design the fuel burns at the vapor level rather than a particulate level, no resulting particles are formed. This is one of the reasons why diesel engines are being restricted, despite their better thermal efficiency. Our tests showed that a white cloth across the exhaust outlet remained white after an extended test run using diesel fuel. For many applications, this capability could prevent the diesel engine from being banned or limited.

- A much improved fuel/air charge pathway through the rotor developed to improve cooling of the rotor and vaporization of the charge. The most power limiting feature of a charge cooled rotor engine like the Rotapower® engine is its ability to cool the rotor enough with the incoming charge to allow a high power output. Our previous patent in this area introduced cooling the rotor on both sides rather than by passing the charge through the rotor. This increased the cooling ability enough to allow the power output to be doubled. It also eliminated the OMC's end loading of the rotor bearing, which together with its limited seal life reduced the engine life to less than 400 hours.

- The new design further improved rotor cooling enough to allow the Rotapower® engine to produce two and one half times as much power for the same displacement as the OMC engine (102 hp from 530cc). This improvement also allows turbocharging, supercharging, or compounding (5-stroke) an engine, which is fundamental to any application where higher power and fuel efficiency are particularly important such as transportation, and gensets. This also should allow the Rotapower® engine to burn biogas more efficiently. This is important in the world-wide effort to reduce global warming. This patent includes a unique way to inject the fuel that adds to its cooling effect on the rotor.

- A compound (5-stroke) version of the rotary engine where two rotors are able to function in series rather than parallel. This patentable approach will improve the fuel efficiency and power output while effectively eliminating exhaust noise. The OMC or Mazda rotary engines are about 15% less fuel efficient than the best piston engine used in the automobile industry. By compounding (5-stroke) the Rotapower® engine the thermal efficiency should match or exceed the performance of state-of-the-art piston engines.

- Unique one-way valve. The compound (5-stroke) rotary engine requires a means to allow the charge to flow in one direction while not allowing it to flow in the reverse direction. This can be done mechanically by driving a timed valve or by a spring-loaded reed valve. The problem with the much simpler reed valve is that it is subject to metal fatigue and is very poor aerodynamically which leads to a larger pressure drop. FM was able to use some technology developed on radial diffusion[1] to create a one-way valve that does not rely on any spring action. A one-way reed valve in an engine may operate at over 100 times per second. Therefore, it does not take long for this stressed component to exceed its fatigue life. This

patentable technology would be applicable to all compressors and engines which either use a reed one-way valve or a complicated mechanically timed valve.

- A rotor cooling arrangement employing a phase change of a liquid that allows almost unlimited cooling of the rotor. This appears to make it possible to achieve up to four horsepower per pound of engine weight and has already allowed the generation of over 3 hp per pound of engine weight (a record for a 4-stroke piston engine at 7000 rpm on gasoline).

- Developed a seal and rotor housing coating material combination that along with a proprietary rotor housing wear surface finish, allowed the wear surface and seal life to exceed a documented 20,000 hours versus 400 hours in the original OMC engine. The historic problem with seal life is best described by the OMC experience, who, like FM, used very hard wear surface material (near diamond level). To minimize seal wear OMC put a 5-micron finish on this wear surface, which required a relatively soft seal in order to seal itself on this smooth surface. By contrast, FM, though much experimentation developed a proprietary finish on the wear surface together with the use of very hard seals. In the first 5 hours of running the hard seals altered the wear surface finish and, in the process, seated themselves. From then on little wear occurs. This process would be applicable to many different applications.

- Completed packaging a mechanical patent specifically addressing the UAV (Unmanned Aerial Vehicle) design of Stella-1000 with Freedom Motors engines. This package is on its way to the Patent office now.

[1] Paul S. Moller. "A Radial Diffuser Using Incompressible Flow Between Narrowly Spaced Discs". ASNE Trans. (Power) Paper No. 65-FE-12. June 1965. Journal of Business Engineers.

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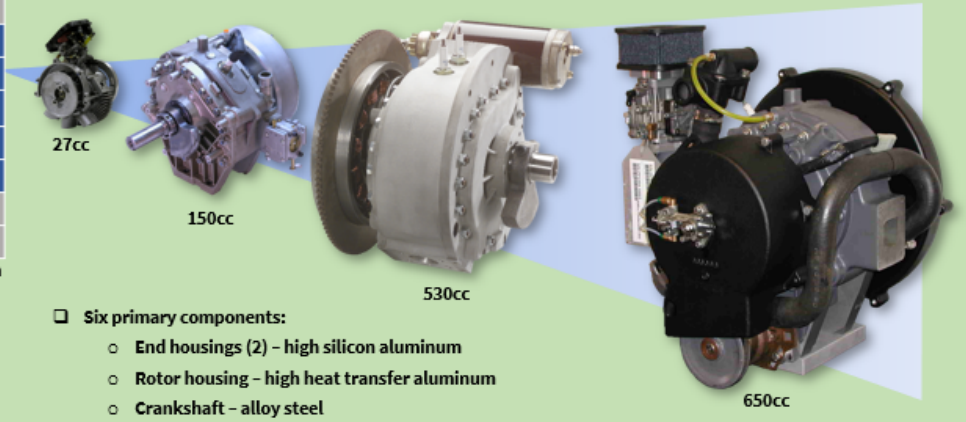
Product Line

Rotapower® Engine Family

Max Horsepower	Displacement	Configuration
2.5	27cc	Single
20	150cc	Single
40	300cc*	2-Rotors
60	530cc	Single
120	1060cc	2-Rotors
180	1590cc	3-Rotors
240	2120cc	4-Rotors
360	3180cc	6-Rotors
75	650cc	Single
150	1300cc	2-Rotors

*** Configuration that have not yet been tested by Freedom Motors.**
cc = Cubic centimeter 1000cc = 1 Liter



- **Six primary components:**
  - **End housings (2) – high silicon aluminum**
  - **Rotor housing – high heat transfer aluminum**
  - **Crankshaft – alloy steel**
  - **Rotor – nodular iron**
  - **Stationary gear – alloy steel**

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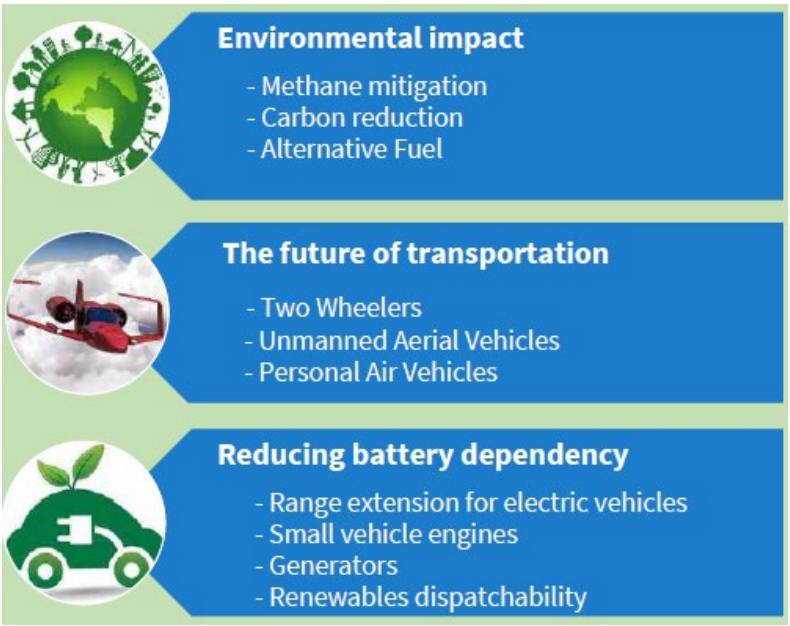
Intended Applications



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Targeted Markets

The following markets are expected to include these targets, where FM will enjoy a significant addressable market and is planning accordingly:

- Powerhouse for unmanned and manned Advanced Air Mobility (AAM) Vertical Take Off & Landing (VTOL) aircraft.

    - Reducing the dependency on batteries
    - Significantly increasing the flight time
    - Significantly increasing the efficiency of the VTOL
    - Speeds of approximately 240 MPH can be achieved
    - Optimal for forest firefighting, rescue operations and military applications and many more applications

- Range extension for Electric Vehicles (EV), thus mitigating the range anxiety issue.

    - Particularly significant in countries where electric infrastructure is sub-par and cannot support EV charging at optimum capacity and speed.
    - Increasing the range of EV's so there is less stoppage for charging.
    - Reducing the cost of upgrading electricity infrastructure (per capita) to accommodate high speed charging.
    - Extremely small size of engines (less than 1 Cu. Ft.), which can fit inconspicuously in the trunk of the EV.

- Mobile EV charging system

    - Due to the features mentioned earlier in this document, Rotapower® engines are excellent candidates due to their low emissions, and extremely low maintenance. These rotary engines are
    - power thus making the products more compact and lightweight. They have extremely fast ramp rates and can ramp up to 10,000 RPM in a matter of milliseconds.
    - They are fuel independent and can run on Hydrogen, Ethanol (preferable), Methanol (preferable), Propane, Biogas, Gasoline, CNG, NG and many more.
    - RotaPac® power range from 1 KW to over 375 KW (depending on the fuel used) and weighs from under 10 lbs to approximately 900 lbs. Here are some models that are popular for residential, commercial and EV uses.
    - Cleaner than operating on electricity grid that has coal and fossil fuel generation.
    - Due to its lightweight and compact configuration, it can be deployed quickly and efficiently without any cost to upgrade the electricity grid.

- Due to its mobility, it can be moved around wherever the demand is. It could be deployed in many numbers to sports events, major functions where thousands of EVs can be charged efficiently.
- highly reliable and have very few moving parts and have modular design for scalability for required energy needs. They have excellent power-to-weight ratio and have a small form factor with more.

- Generators

  - Rotapower® engines are excellent candidates for use in generators, due to their low emissions.
  - Extremely low maintenance. These rotary engines are highly reliable and have very few moving parts.
  - Modular design for scalability for required energy needs.
  - Excellent power-to-weight ratio of Rotapower® engines provides small form factor engines with more power. Thus, making the generators more compact and lightweight.
  - Extremely fast ramp rates. These engines can ramp up to 10,000 RPM in a matter of milliseconds.
  - Fuel independent. Can run on Gasoline, CNG, NG, Biogas, Ethanol (preferable), Methanol (preferable).

- Power generation using biogas.

  - Due to its metered lubrication system, Rotapower® engines provide a perfect alternative to oil cooled conventional engines, thus avoiding the acidic residue due to the combination of engine oil and hydrogen sulfide in biogas.
  - Rotapower® engines can tolerate silica (prevalent in most biogas) by using chrome carbide wear surfaces and silicon nitride seals (9 Mohs of hardness versus 6-7 Mohs for silica). The rotary engine does not need or use valves, which could be damaged by silica deposits.
  - Rotapower® engines uses a modular iron rotor with a low thermal conductivity, as opposed to the aluminum used in many piston engines. This results in a rotor surface temperature of up to
  - 900°F versus an aluminum piston at 400°F. This contributes to combustion of biogas with lower methane content.
  - Rotapower®, as distinct from a piston engine, has an intake chamber that is separate from the expansion chamber. This prevents the expansion chamber surfaces from being pre-cooled by the intake charge, which further aids in combustion.
  - The Rotapower® engine has only three moving parts. By comparison, a two-cylinder piston engine typically contains over fifteen moving parts, with each subject to the corrosive effects of hydrogen sulfide.
  - The estimated capital cost for generator sets ("gensets") powered by Rotapower® engines is substantially less than for those powered by either piston or microturbine engines.

- 2- and 3-wheeler market by replacing the piston engine with Rotapower® engines.
    - This will increase the volumetric area in the engine compartment, thus enabling hybrid power and longer range.
    - It will make the vehicle potentially fuel independent (may need a minor change to the EFI or Carburetor).

- Power tools applications.
- Auxiliary Power Units (APU) for Airplanes
- Powerhouse for marine vehicles like speedboats, jet ski, and others. Potential for naval use in unmanned small vessels. The engine should be considered stealthy, in that its noise and vibration levels are extremely low (though it does emit infrared heat).
- Demand response applications with batteries to aid smart grid technologies to enhance wind and solar energy.

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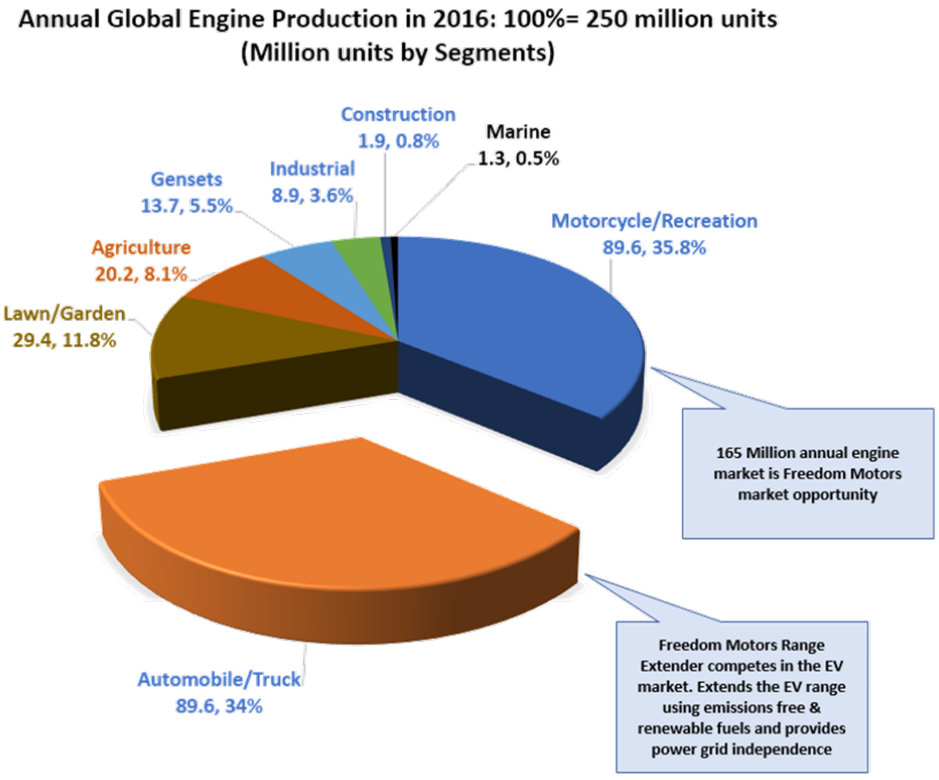
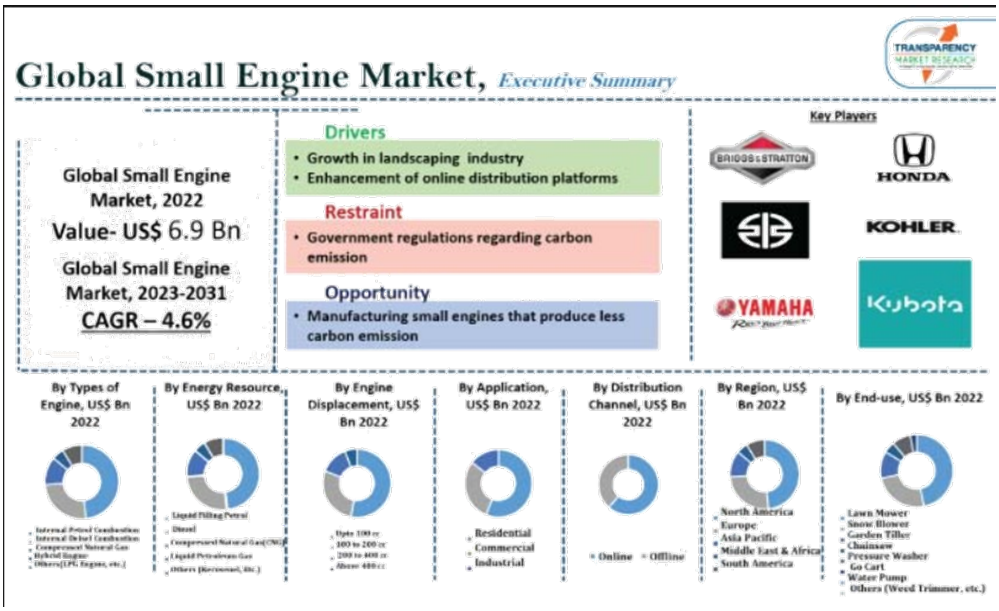
Market Potential & Opportunity



FM targets the global small engine market where we are confident to take at least 2 to 3% of the market share. The global small engine market is rapidly growing and Rotapower® engine advantages are significant over all other engine producers



Total Addressable Market

As the world moves towards renewable fuels and battery storage technologies, more emphasis has been placed on technologies to efficiently use fuel and charge battery systems. This renaissance is solely attributable to global warming and the threat to our environment and ultimately to humankind. FM has done extensive analysis on the Total Available Market and developed a comprehensive study document.

Industries where the Internal Combustion engines are poised to have CAGR gain are

1. Advanced Air Mobility (AAM)
2. EV Range extender
3. Industrial
4. Construction
5. Marine
6. Agricultural
7. Gardening
8. Generators
9. Motorcycles
10. Recreational Products
11. Automobiles/Trucks
12. Military

The (ICE) market is segmented on the basis of fuel, end-use and application. The growth amongst these segments will help analyze growth segments in the industries and provide a valuable market overview and market insights. The global internal combustion engine market size was estimated at 169,603.7 thousand units in 2021 and is projected to register a compound annual growth rate (CAGR) of 9.3% from 2022 to 2030. Demand for the product is increasing across industries such as agriculture, construction, mining, and power generation.

FM is focused on the small engines market which is expected to witness a global CAGR of more than 4% during the forecast period of 2022-2027. The majority of the growth is attributable to India, China, and the Asia Pacific (APAC) markets. The global small engine market was valued at US$ 7,732.3 million in 2013 and is anticipated to be valued at US$ 4,127.2 million by 2018 end. The small engine market is expected to grow at a substantial CAGR of 4.0% between 2018 and 2026 and is estimated to reach a global value of US$ 5,628.2 million by 2026 end.

According to Morgan Stanley, the AAM TAM base case is projected to be $1 Trillion by 2040, but rolls out projections until 2050, when the TAM is projected to be over $9 Trillion.

Also, according to Deloitte, AAM market poised to grow sevenfold between 2025 and 2035.

1. By 2025 it will be $17 Billion ($13 Billion Cargo AAM and $4 Billion in Passenger AAM)
2. By 2030 it will be $47 Billion (($30 Billion Cargo AAM and $17 Billion in Passenger AAM)

3. By 2035 it will be $115 Billion (($58 Billion Cargo AAM and $57 Billion in Passenger AAM)

The global demand for 2 and 3-wheeler engines is over 50 million per year and it is a very lucrative market that is projected to dominate mobility in emerging economies.

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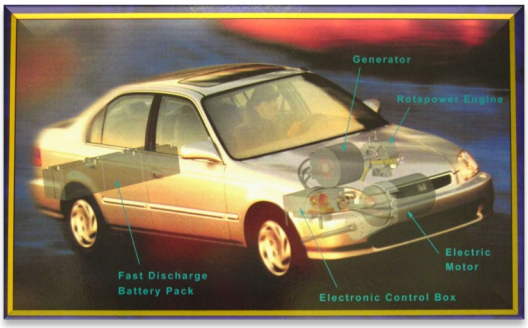
Prototypes Developed

FM has successfully developed and tested the following prototypes

1. Range Extender (REX) for EV and eVTOL aircraft. For onboard charging (DC fast charging can be accomplished) while the vehicle in is motion thus providing the independence from the electric grid.
2. Hybrid car
3. Genset
4. Speedboat
5. ATV
6. Jetski
7. Several unmanned VTOL aircraft (sold numerous to the US Government)
8. Couple of manned VTOL aircraft (numerous flight tests with human in it. Last flight test in 2016). Now waiting for Freedom Motors to produce engines
9. Weed whacker
10. Scooter (2-wheeler)
11. Tuk-Tuk (3-wheeler)

Rotapower® Scooter Prototype

Rotapower® Plugin Hybrid Electric Vehicle (PHEV) Prototype



Rotapower® Engines Powered VTOL Prototype

FIREFLY
Runs on Gasoline, Ethanol and Methanol.
1-4 occupants

APPLICATIONS
Agriculture
Construction
Search and

Rotapower® Engines Powered UAV Prototypes

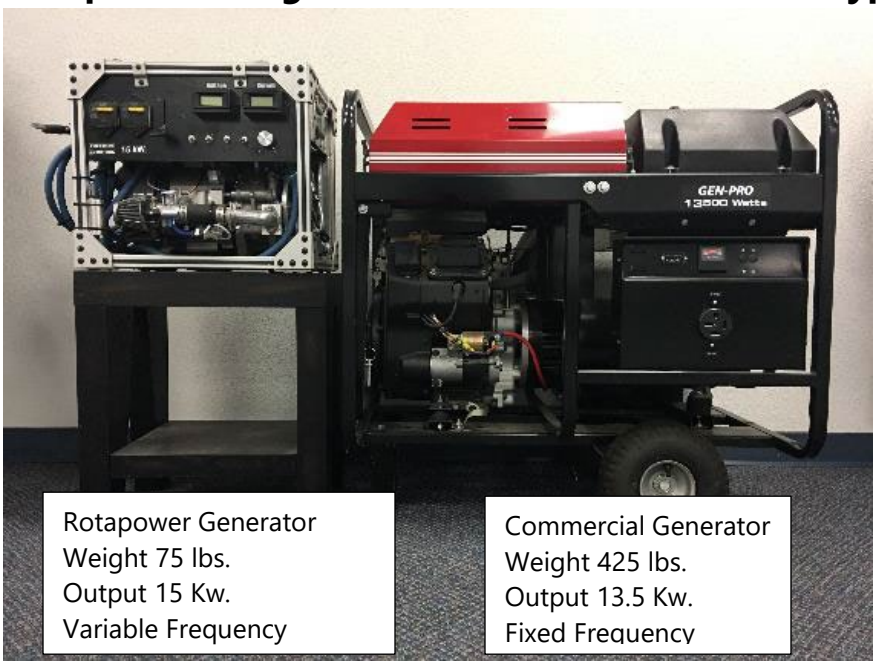
AEROBOTS

Electric or Fuel Powered
Runs on any fuel

APPLICATIONS

Agriculture

Rotapower® Engines Powered Generator Prototype

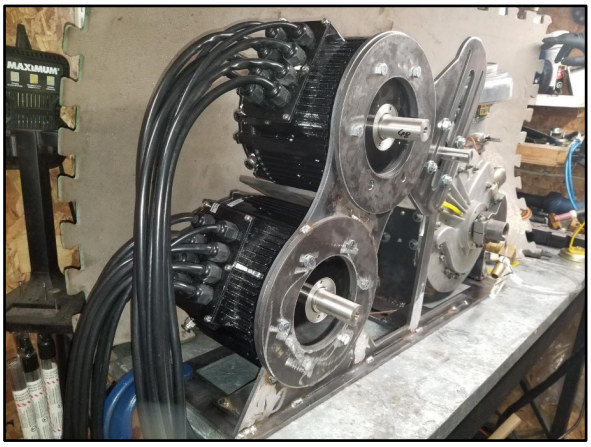


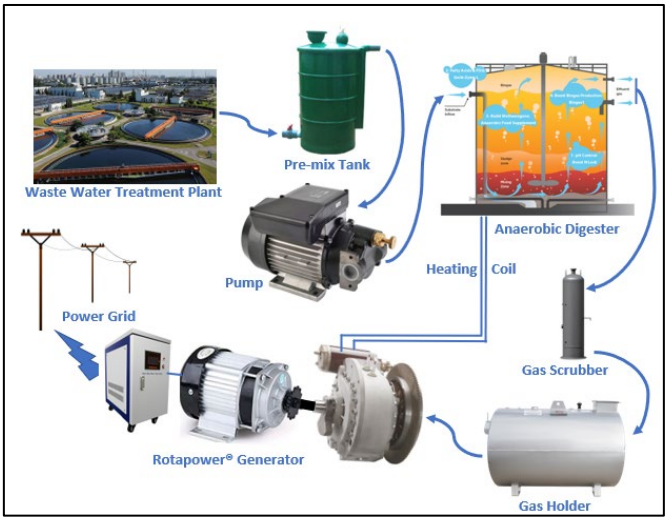
Rotapower Generator
Weight 75 lbs.
Output 15 Kw.
Variable Frequency

Commercial Generator
Weight 425 lbs.
Output 13.5 Kw.
Fixed Frequency

A range extender or a mobile EV charging system is based on above prototype design.

Rotapower® Engine Powered Biogas Generation





Additional Applications that are possible





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Notable Work Through Contracts

The following are the US Government contracts related to the Rotapower® Engine development. Freedom Motors acquired all the Rotapower Engine® assets from Moller International, including the intellectual property developed through these contracts.

NASA/Lewis Research Center provided a contract to explore the use of a proprietary wear surface coating material (NASA PS 400) to allow the Rotapower® engine to operate without a liquid lubricant. This could have allowed it to operate adiabatically with the potential for a much higher thermal efficiency. This project was funded by a phase 1 and phase 2 DARPA contract number NAS3-26309. The result was successful and led to an achievement award from NASA/Lewis.

CalStart Contracted the development of a series hybrid car powered by a 100 hp. Rotapower® engine mounted in a lead lined aluminum enclosure with a total volume of less than one cubic foot. A second objective of this

project was to achieve a level of regenerative braking sufficient to recover most of the braking energy. The technology would apply to vehicles in stop and go applications like taxis and in-city buses. The design involved the use of a spiral-wound lead acid battery with a large active surface area. Enough of the braking energy was recovered to extend the range by over 60%. Unfortunately, the life of the spiral wound battery proved too short to be useful. Super capacitors would now eliminate that problem. The resulting engine enclosure volume was less than ¾ of cubic foot. This project was funded by a phase 1 and phase 2 DARPA contract number RA-94-24.

US Air Force Contract to utilize the high power and low volume of the Rotapower® engine to create a very mobile, small, and high payload drone with VTOL capability. The drone was to be used to assess airfield damage, following a nuclear attack. Two drones were delivered to Wright Patterson Air Force Base under the requirement that no information was to be released regarding this UAV development. We were informed that the drones were eventually used as part of several thesis projects in the post-graduate school at the base. The drone measured 2.5 feet in diameter and 2 feet high. It could carry 50 lbs. for over 100 miles. The project was funded by a phase 1 and phase 2 DARPA contract number AF88-146/SBIR.

US Air Force Joint Effort Contract to develop improved manufacturing methods for the Rotapower® engine for Manufacturing Sciences Inc., located at the McClellan Airforce base in Sacramento, California. It was a $900,000 contract. A lengthy manufacturing plan was generated that emphasized the latest casting and machining technology. Contract number TMC96-5835-008-01.

US Army Contract to demonstrate the ability of the Rotapower® engine to operate on diesel fuel while utilizing homogeneous combustion. It has been shown that a small displacement Rotapower® engine could use diesel fuel with homogeneous combustion. The goal of this project was to determine whether this was possible at larger engine displacements. Dynamometer testing showed very promising results, however, funding was insufficient to fully quantify the engine performance. It was funded by phase 1 and phase 2 DARPA contract number DAAB07-97-C-6007.

General Electric (GE)/Infinite Engine Company (IEC) Provided a contract to develop a two- rotor 1500cc diesel fueled charge-cooled Rotapower® engine. It was to be produced for GE by IEC under a license agreement. The engine was to be used in a UAV military application and to operate on directly injected diesel fuel using spark ignition. It went into modest production, primarily for a different application. Funding was $1.75 million under contract number UAV/GEDDMOAD979.

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Historical Evaluation

Since FM was formed in 1997 as a Division of Moller International (MI), records show that FM has spent approximately $1 million per year on engine development. For the 25 years before FM became a separate C-corporation in 2001, it is estimated that MI spent approximately $1.5 million per year on rotary engine

development. These funds were secured from the proceeds of its successful production of MI's internationally recognized SuperTrapp exhaust systems and proceeds from the successful completion of Davis Technology Park. FM acquired the entire rotary engine intellectual and physical assets of MI in 2001 along with an exclusive worldwide license to produce and distribute the Rotapower® engine.

MI rotary engine assets also include acquisition of rotary engine technology and assets of General Motor Corporation (GMC), Outboard Marine Corporation (OMC) and Infinite Engine Company (IEC).

Total funds raised and expended by Moller International (engine development): $37.5 million USD

Total funds raised and expended by Freedom Motors, Inc (since 1997) (engine development): $23 million USD.

Total funds expended (including $5 million revenues reinvested): $65.5 million USD.

Acquisition of General Motors Corporation (GMC) rotary engine assets, Outboard Marine Corporation (OMC) and Infinite Engine Company (IEC).

Funds expended by GMC towards rotary engine R&D: $500 million USD

Funds expended by OMC towards rotary engine R&D and development: $250 million USD

Funds expended by IEC for rotary engine production: $25 million USD

Prototypes, machinery, equipment, and testing tools valued at $10 million USD

In 2018, Freedom Motors embarked on Crowd Funding initiate on StartEngine portal. The common shares were sold at $1.50 per share.

In 2019, Freedom Motors secured a significant number of conditional orders its engine from two large companies in USA and Singapore. The contracts could provide over $600 million USD in revenue.

In 2020, Freedom Motors secured another contract to develop range extension prototype and potential licensing in USA and EU. FM also has partners and resources to manufacture in large numbers in India.

In 2021, Freedom Motors successfully signed a MOU with a large energy corporation from Canada to jointly develop groundbreaking alternative fuel technologies.

In 2023, Freedom Motors successfully partnered with an Electric Vehicle (EV) retrofitting company in the USA to develop range extension prototype and potential licensing in USA.

Based on current interest from potential licensees, the initial advice and efforts from Epsilon Venture Partners, and the consensus of our Board of Directors and Advisors, Freedom Motors estimated to be valued at approximately **$130 million USD**.

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Financial Analysis

Freedom Motors seeks a total of $16 million USD for the proposed project. The funds will be used in the following way:

1. $6 million to achieve modest production of FM's 530cc Rotapower® engine for non- aviation use.
2. $5 million to fully develop its 5 stroke Rotapower® engine which has the following additional attributes where noise is particularly important in the air taxi application.
   a) Potential 20% decrease in fuel consumption.
   b) 50% reduction in exhaust temperature
   c) 95% reduction in noise which is particularly important in an air taxi which must operate within the city.
3. $5 million as a contingency and to contribute to the integration of the 5 stroke Rotapower® engine into the Skycar® 100X.

Freedom Motors has a plan to license manufacturing targeting Asian markets. The anticipated licensee is expected to receive the manufacturing license for $3.5 million (consultation and technology transfer fees are additional) and self-fund its engine production and operations.

Here is how Freedom Motors (FM) derived its sale price of its engine products. The comprehensive analysis is done in 2018 and normalized to accommodate any changes in raw materials price and labor costs.

All data was analyzed and compiled using information (materials cost, equipment amortization, labor cost, etc.) related to the United States of America (USA).

Based on our comprehensive analysis and the total investment cost, FM has developed a comprehensive financial model with modest engine production for 5 years.

The input parameters included were:

1. House and outsourced cost of goods
2. 10% royalty and R&D activities
3. 4% marketing
4. 10% G&A (General and Administrative expense)
5. 7 years straight-line depreciation

6. Facilities lease (if any)
7. Taxable income and corporate taxes effective 2018

The cost of goods was derived from the commodity markets. The raw materials required for manufacturing are steel alloy, aluminum alloy, nodular iron, and chromium carbide (for the coating).

Trading values for the raw metals

1. Steel alloy is under $1 per pound
2. Aluminum alloy is under $2,200 per metric ton
3. Nodular iron is under $150 per metric ton
4. Chromium Carbide powder costs around $50 per Kilogram (in bulk purchase)

A comprehensive FM analysis of year-by-year manufacturing and its associated cost and revenues are modeled and can be downloaded for further review [FM Manufacturing Model]

Based on the manufacturing model, with an initial investment of $6 million, in 36 months, the projected gross revenues are $51.4 million and cash on hand estimated at $24.7 million.

The definition of the initial production year is where we procure manufacturing equipment, install, and receive training from the vendor. We also concurrently develop specific tooling for our engine parts. Subsequently we would be starting production with the initial set of 150cc and 530cc engines.

Large scale production starts immediately after the success of beta production. FM has extensive experience in beta production therefore our expertise and the vendor's experience in producing tooling is necessary to achieve success.

The pricing of engines is the result of our comprehensive analysis of market data and carefully deriving at a cost price (Total Burdened Cost) and then sales price. The sales price is determined to ensure we are competitive in the market space, it also implies a breakeven point for Return of Equity (RoE) in year two. This will also provide the investor with approximately a 13-fold investment appreciation and an EBITDA of 8x, by the end of year three.

Freedom Motors emphasizes the point that this analysis is based on manufacturing of a modest number of engines in given years, which is significantly smaller than our current conditional orders and letters of intent to purchase (LOIs) which exceed 3 million engines to be manufactured by FM's licensees over the next five years.

FM has an outstanding debt that is a little over $2.5 million to Moller International for contract services received. FM also has entered into a series of unsecured convertible notes payable from existing and potential shareholders totaling a little over $2.5 million (including accrued interest). There is no other non-convertible debt of FM. FM owns all its equipment and tools related to engine development and manufacturing, with a replacement value of over $10 million.

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Secured Orders

FM receives miscellaneous small and medium enquiries every month. The enquiries range from about few hundred to over a thousand engines.

Additionally FM has secured confirmed orders and Letters of Intent (LOI) which can be readily converted to confirmed order when production starts. The details of orders and LOI are detailed in the FM Manufacturing Model.

It is important to note that a modest production capacity of fifty 530cc engines per day can be achieved with $6 million initial investment. FM has very high confidence that all of these engines produced will be sold immediately to our established customer base.

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Revenues & Funds Generated

These revenues discussed here is in addition to the influx of approximately $30 million from Dr. Moller's proceeds from the SuperTrapp Corporation and Davis Research Park development. Additionally, the stakeholders (individual investors) have contributed another $35 million. This $65 million was primarily used to develop the technology (after acquiring OMC, GMC, and IEC).

While developing the technology, Freedom Motors was also engaged in many contracts that generated millions of US dollars to continue to sustain and operate. Here they are.

1. Hybrid automobile under a $900,000 contract from the US government. Converted a Honda Civic to a fully operational proof of concept hybrid car.
2. $2 million in USD contracts by the US military for a number of different unmanned drones and for use in security applications. (**Classified.**)
3. General Electric (GE) $1,750,000 contract to develop a two- rotor 1500cc diesel fueled charge cooled Rotapower® engine for aviation.
4. The specialized coating on the engine parts was developed through Small Business Innovation Research (SBIR) funding from NASA's Glenn Research Center under a $875,000 contract.
5. US Army contract (under $1,000,000) to make Rotapower engine operate on Diesel fuel while utilizing homogeneous combustion.
6. Contract for $975,000 from the US Airforce to create a Rotapower® engine manufacturing plan as part of privatizing the McClellan Air Force base in Sacramento, California.

7. Freedom Motors has made a beta production run of over 250 of its 530cc engine model and many of them were used for Moller International prototypes (revenues generated approximately $1,000,000).
8. FM sold over 50 of 530cc engines at a remarkably high markup price for a three-rotor engine in jet ski boats and two-rotor engine in jet boats (revenues generated, approximately $500,000).
9. Licensed RotaMax Industries to produce the 650cc and 1300cc Rotapower® engine only for mud boats; over 500 engines were produced. Remarkable revenues generated due to high markups in high performance recreational industry (revenues generated over $1,000,000).
10. 15 Kw gen-set was developed under a contract ($200,000).
11. Ryobi power tool (27cc Rotapower® engine) was developed under a $500,000 contract.
12. Motor scooter under $600,000 contract from a scooter manufacturer (Alife Air). Received $150,000 so far and expecting another influx of $500,000 (Delay due to Covid). Also, received 3 scooters for prototyping.

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Manufacturing Plan

In addition to a modest manufacturing plan in Dixon, CA, FM has identified a manufacturing partner in Singapore and is awaiting funds to get started.

The most desirable manufacturing places with appropriate market capture is either East Asia (including not only China but countries like Singapore, Indonesia, Vietnam, or Malaysia) and India. Freedom Motors has considered all factors including protection of IP (Intellectual Property), talent pool, cost of manufacturing, governmental policies, and nations favorable to US businesses. Based on all our research and observations, we have concluded that Singapore is the best country to establish manufacturing and expanding our global operations.

Singapore's manufacturing labor talent pool is considered comparable to that of the USA and at a significantly lesser fully cost basis. The labor laws are also well-balanced and favorable for Freedom Motors operations.

FM has done extensive research of raw materials required and machinery to be used to mold, cut, mill, etc. Singapore has access to abundance of the raw materials we seek, and the transportation is also reasonable and trustworthy.

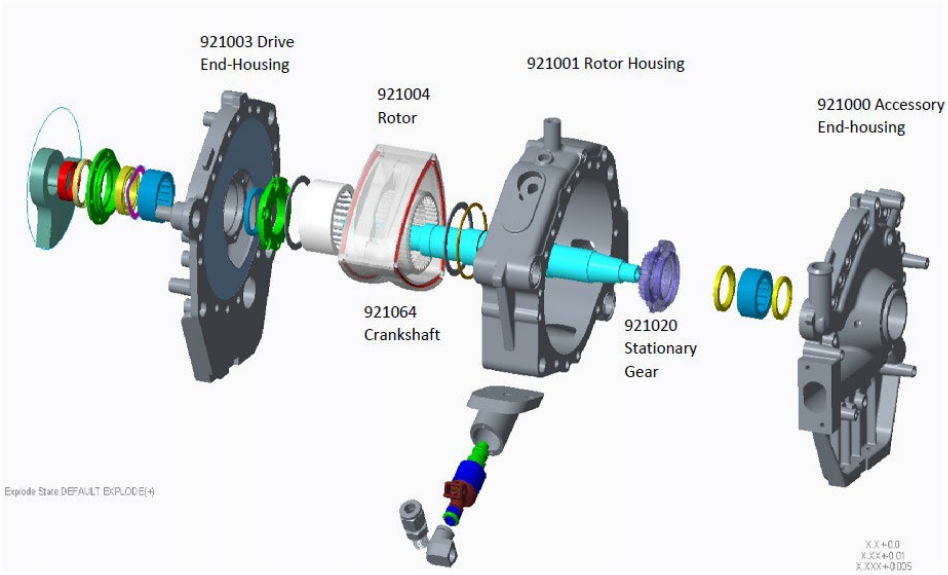
FM has identified DMG MORI, Weldon, HAAS, and Methods Machine Tools as our equipment and tool development partners. FM had extensive discussions with these partners, and they are very well versed with our technology and can mobilize in moment's notice. It is planned to have these partners under contract to develop tooling for production and train the personnel after they install the equipment.

FM currently leases out a little 8,000 Sq. Ft. of facility for manufacturing, 5,000 Sq. Ft. of office and R&D space and has constructed additional 5,000 Sq. Ft. of facility for engine testing and inventory facility.

FM owns majority of the manufacturing equipment and plan to purchase some advanced equipment in order to target a production capacity of fifty engines per day. The following is a partial list of equipment currently owned by FM. The FM manufacturing model has listed the additional equipment planned to be purchased.

Name	Replacement Cost	Model
Comet CNC Machining Center	$71,500	VMC 520
Hurco CNC machining Center	$120,500 (upgraded)	BMC-40
Gehring honing center	175,000	KS500-180
Gleason Side Seal Slotter	$2,000,000	804
Gleason side seal Slotter	$2,000,000	803
Gleason trochoid grinder	$4,000,000	800
Wind Tunnel & Balance	$350,000	Kenney 1185
Pohl Dynamometer	$125,000	1014W16
Schenck Trebel Dyno	$60,100	270
Froude Cosine Dyno	$48,480	AC150HS
Engines and Engine parts	$250,000 (estimated)	
CNC Machining tooling	$80,000 (cutters etc.)	
Pro Balance Engine balancer	$15,000	Pro-BAL
Vectrex Surface Grinder	$18,500	JL3A818
Humphrey Vertical Dynos (5)	$12,500	
Lacfer Lathe	$17,750	C-R-I-250
Clarke Forklift	$9,500	Type G
Motec Engine Management System (15)	$16,500	M4
Erault-Somus Engine Lathe	$17,500	AC280/6876
Horiba Emissions Analyzer (2)	$10,088	Mexa 544 6F
Computers, laser printers, printers, servers, network equipment, etc.	$100,000 (estimated)	

The following image is a detailed 3-D view of our engine (with part numbers). This image is part of our detailed manufacturing manual.



The following table is a description of the equipment needed for high volume production. It is also a part of our detailed manufacturing manual.

Process	Description	Recommended Equipment	Out-Sourcing Available	Typ. Low-Med. Volume Production	High Volume Production
921000-2 Process	Accessory End-housing				
921000-2 PS005	Aluminum Casting	Aluminum Casting Foundry	Yes	Vender	In-house Facility
921000-2 PS010	T-71 heat treat part. Condition & tumbled part	Heat Treat Equipment Tumbling Equipment	Yes	Vender	In-house Facility
921000-2 PS020	Face flat side of end plate	4-Axis Mill	Yes	In-house	In-house Automated
921000-2 PS030	Flow & leak test	Compressor	Yes	In-house	In-house Automated
921000-2 PS040	Machine engine face features	4-Axis Mill	Yes	In-house	In-house Automated
921000-2 PS050	Wear coating applied	HVOF Plasma Spray Equipment	Yes	Vender	In-house Facility
921000-2 PS060	Surface grind/lap the flat side of end plate.	Flat Lapping Machine	Yes	In-house	In-house Automated
921000-2 PS070	Machine features on back side of part to finished dimension	4-Axis Mill	Yes	In-house	In-house Automated
921000-2 PS080	Finish machine the stationary gear, bearing, and 35mm dia seal bores	4-Axis Mill	Yes	In-house	In-house Automated
921000-2 PS090	Machine intake port face features, mounting surface features, and oil inlet fitting hole	4-Axis Mill	Yes	In-house	In-house Automated
921000-2 PS100	Walnut blast, clean, de-grease	Media Blaster, Ultra-Sonic Parts Washer	Yes	In-house	In-house Automated
921000-2 PS110	Inspection	CMM, Digital Optical Comparator, Inspection Equipment	Yes	In-house	In-house Automated

Manufacturing equipment required for high volume engine production

- Raw materials are steel alloy, aluminum alloy, nodular iron, and chromium carbide for coating.
- The crankshaft is simple and could be produced in large numbers on an automated lathe (about $175,000).
- The rotor is only complicated due to the accuracy required, which is available from a-state-of-the-art machining center (about $250,000).
- Surface grinding and lapping capability is estimated at $750,000 for purchase of a state-of-the-art surface grinding and lapping center.
- Plasma metal spraying will be needed (cost: less than $200,000). This machine must be automated to ensure even coating.
- Rotor housing grinding is necessary, and it must be very robust and could cost $750,000 for the equipment.
- Heat treatment is probably available, but if it is not a higher volume septum could cost from $100,000 to $150,000.
- There are many casting facilities near the proposed manufacturing location. FM is considering seeking outside expertise to provide lost foam castings for all engine models. The Rotapower® uses an alloy steel crankshaft and stationary gear, a modular iron rotor and a standard alloy aluminum housing. Depending on what is available locally, the total production and support equipment could cost from about $2 million per engine model and manufacturing line.

FM is also keenly focused on low volume and high markup opportunities in North America and EU such as, military use cases, aviation, and energy industry. These opportunities are under strict regulations of where the manufacturing occurs and lower tolerance levels. The Singapore licensee on the other hand will focus on large volume production at lower cost to compete in the Asian markets.

FM plans for a robust production process in the USA that works hand in hand with the mass manufacturing facility of the licensee. To maintain a high level of replicability and reliability, FM plans to acquire a set of the same equipment that it recommends for high volume manufacturing by the licensee. This equipment will be used for the low volume and high markup focused industry in North America and the EU.

FM has an extensive library of manufacturing information and trade secrets, which it relies on. FM also has a strong team across the world that it can tap into for expertise when its needed. FM's team has over 200 years of combined experience in research, development, manufacturing, management, and marketing.

Currently FM has the capability to perform research, develop new engine designs, and work with manufacturing partners to produce Rotapower® engines.

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Funds Requested & Deployment Plan

Freedom Motors seeks a total of $16 million USD for the proposed project. The funds will be used in the following way:

4. $6 million to achieve modest production of FM's 530cc Rotapower® engine for non- aviation use.
5. $5 million to fully develop its 5 stroke Rotapower® engine which has the following additional attributes where noise is particularly important in the air taxi application.
   d) Potential 20% decrease in fuel consumption.
   e) 50% reduction in exhaust temperature
   f) 95% reduction in noise which is particularly important in an air taxi which must operate within the city.
6. $5 million as a contingency and to contribute to the integration of the 5 stroke Rotapower® engine into the Skycar 100X.

Freedom Motors has a plan to license manufacturing targeting Asian markets. The anticipated licensee is expected to receive the manufacturing license for $3.5 million (consultation and technology transfer fees are additional) and self-fund its engine production and operations.

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Risks & Mitigations

There are no businesses without risks. FM believes in mitigating risks based on solid planning, strategic thinking and developing a trustworthy employee and talent pool. We have identified several risks that have specific mitigation plans.

a. Aggressive timeline from securing funding for production.
b. Current firm orders need to be implemented in the near future by establishing a high volume manufacturing facility.
c. Current conditional orders and Letters of Intent (LOI) are volatile if not secured as physical orders in near future.
d. First mover in this space in the world.
e. Hire experienced team to augment executive team.
f. US Dollar volatility in the global market.
g. Managing supply to demand.
h. Many patents and trade secrets need to be maintained.
i. Supply chain risk.

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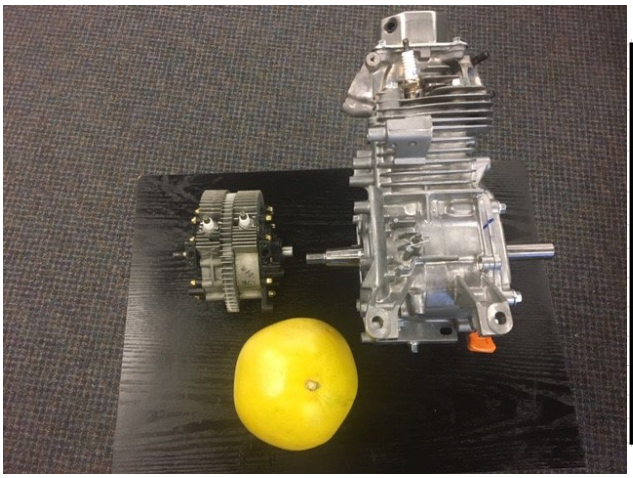
Future Product Roadmap

- Continue to develop compounding technology (5-stroke) for Rotapower® engine
    - The current design is ready for commercialization. The plan is to ensure that all products 27cc through 650cc be tested and matured for compounding (5-stroke) by Fall 2024.
- Develop the 75cc engine, which appears to enjoy high demand in the APAC region.
    - We have the specifications and prototype for a 75cc engine.
    - The plan is to fully develop compounding (5-stroke) by Fall 2024 and high volume manufacture thereafter.
- Further develop multi-rotor complex 530cc engine specifically for large generators and power grid applications
    - This concept is considered an extension of compounding (5-stroke) but is very specific to the 530cc or larger classes. The plan is to fully test and ready for a proof of concept by Winter 2024.
- Develop in-house capability to manufacture engine seals and bearings

- Freedom Motors has strong relationships with manufacturers. We plan to have an in-house capability by Winter 2025.



Comparison Between Rotapower® Rotary Engine and Four-Stroke Piston Engine of same Horsepower		
	Piston Engine	**Rotapower® Engine**
Power- Gasoline	6.5 hp	6.5 hp.
Power- Alcohol	7 hp	10.5 hp.
Displacement	212 cc	108 cc (equivalent)
Weight	17.6 lbs.	3.95 lbs.
Volume	430 cubic inches	70 cubic inches

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Product Development Timeline

2001 - Undertook a cost analysis in which we tested diamond dust particles in a nickel-plating process. Developed a stratified charge fuel injection system, while exploring the use of the Ficht fuel injection nozzle to accomplish this. This is a major undertaking because it required substantial changes to the rotor housing and the development of a unique control algorithm for the fuel and ignition system.

2002 - Undertook alternative fuel studies using:

- Natural gas
- Alcohol-water
- Alcohol
- Gasoline-water
- Diesel

Developed high pressure fuel injection system for diesel fueled Rotapower® engine. This was a nine-month program.

Single rotor 530cc installed in an all-terrain vehicle (ATV)

2003 - Designed metric 650cc engine.

Began non-metric 650cc series engine development for licensee RotaMax.

Developed 150cc series metric engine (funded by investment from RotaMax.

Began development of diesel fueled 530cc Rotapower® engine.

Two-rotor 530cc engine installed in jet-boat.

2004 - Developed two-rotor test nacelle (streamlined housing) for testing ducted fan version of the Rotapower® engine. Carried out tests over a one-year program.

Explored intake and exhaust tuning on dyno to provide dynamic intake charging leading to a 15% boost in power.
Several contracts underway during this period.
ATV engine design (single rotor).
Auxiliary diesel engine for trucking industry (single rotor 450cc engine).

2005 - Beta production run of 530cc, 1060cc, and 1590cc Rotapower® engines.
650cc and 1300cc engines entered beta production by licensee RotaMax.
Designed 150cc engine, prototype nearing testing.
Design and development of 27cc underway.

2006 - Dyno testing of 150cc engine underway.
Carried out extensive emission tests using different fuels.
Research program continued into less expensive wear coating (ceramics, iron-moly, etc.).
Modular form of 530cc engine developed.
Compound (5-stroke) engine design being explored.

2007 - 530cc compound (5-stroke) engine developed and tested in year-long program (patentable).

2008 - Began beta production of 150cc engines.
Optimization studies of compound (5-stroke) engine underway.
Letters of intent to purchase engines reached 900,000 engines.
Three-rotor 530cc engine installed in Jet-boat and thoroughly field tested.
Developed high power 1060cc Rotapower® engine for Skycar® (208 hp and 65 lbs.).

2009 - Developed a 15 Kw gen-set capable of providing variable frequency and viable voltage. Weight was 20% of competing gen-set.
Produced a specific 27cc engine under contract from Ryobi and integrated it into a weed-whacker.

2010 - Second compound (5-stroke) engine version developed and tested.
One-way valve critical to compound (5-stroke) engine developed and endurance tested (patentable).

2011 - Developed and tested entirely new cooling path through rotor that improved rotor cooling by 30% (patentable).
Developed and tested fuel injection directly into rotor that improves fuel economy by timing fuel charge to be richer near plug (patentable).

2012 - Developed a magneto ignition required for aircraft use of our engine.
Redesigned the rotor housing to use two side-by-side spark plugs in place of following and leading plug. This arrangement improves fuel consumption by 8%.

2013 - Developed water injection phase change cooling system for rotor that allows sufficient cooling to enable doubling the power output through turbo charging (patentable).
Quantified our discovery that we could use diesel fuel in the Otto cycle in a proprietary (trade secret) combination of engine displacement, engine RPM and brake mean effective pressure BMEP. This greatly simplifies the use of diesel in smaller engines. Letters of intent reach 3.5 million.

2014 - Developed a motor scooter compatible 150cc engine and installed it in a charger scooter under a $600,000 contract from ALIFE Automotive in Singapore. This was a year-long program of design, development, and testing.

2015 - Developed an engine and integrated it into a three-wheel vehicle for ALIFE Automotive.

Redesigned engines for Neuera 200 including integrating sound attenuating system, new starter, and direct fuel injection system in place of carburetors.
Developed new fan/hubs to fit engines.

2016 - Designed layout in newly leased facility to fit the R&D needs.
Designed compound (5-stroke) version of 27cc engine.
Completed move to newly leased facility.

2017 - Developed mobile dynamometer and began testing of Rotapower® engine operating on biogas.
Explored this application as a new business opportunity.

2019 - Developed an untested prototype of our 27cc compound (5-stroke) engine
The 27cc engine is the foundation for the compound (5-stroke) 25cc and 50cc and based on its performance, the compound (5-stroke) versions should not only be the most powerful engine for its size in the world, but also the one with the highest efficiency.

2020 - Developed a patentable charge transfer arrangement to be used on the compound (5-stroke) Rotapower® engine. This design eliminates a number of moving parts and is the result of over 1,000 hrs. of design and hundreds of experiments. This is the single most rewarding accomplishment in our 50 years of engine design.

2021 – Ongoing prototype testing to operate Rotapower® engines using hydrogen fuel.

2022 - Successfully tested the prototype engines on hydrogen fuel, with OneH2 Corporation. Developed the generator armature with our partner to produce electricity with hydrogen fuel. Developed a design document to produce Rotapower® engines based generators for DC fast charging (30 KW and 200 KW) for EVs.

2023 - Entered into a contract with the Singapore Group to license to manufacture in Singapore to capture Asian Markets. Entered into an MOU with Veolectra, Inc. to jointly develop gasoline Range Extender (REX) for commercial trucks and vehicles. Entered into an agreement with a Chinese Group for EB-5 investments up to $1 billion (1,250 investors).

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Production Timeline

FM plans to begin beta production in summer of 2024 and subsequently start large production in fall of 2024.

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Exit Plan

FM plans to issue a US IPO (Initial Public Offering) within 3 years from the beginning of manufacturing, or to merge strategically with a viable partner.

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Strategic Plan

THE ORGANIZATION WE DESIRE TO EXHIBIT:

- Superior management and strategic vision.
- Kaizen principles of continuous self-improvement.
- Clearly measured and managed strategic objectives.
- Focus on revenue and employees.
- Strong international ties between APAC, EU, and MENA.
- Strategic partnerships/contracts with US and Indian governments.
- An intrinsic desire to change within its workforce.
- Adaptivity to rapid growth.

OPPORTUNITIES

- The world is prime and ready to use renewable energy.
- There is a global push to use alternative fuels.
- We see a lack of large-scale advancements to battery storage technology.
- Continuous advancements in FM technology (Trade secrets).
- We possess strong relationships, connections and influence in Indian market and government.
- We also have strong relationships, connections, and influence with US entities.
- We can access low-cost skilled labor in Singapore.
- We benefit from strong relationships with equipment manufacturers and outsourced COGS vendors.

THREATS

- Global economy is slowly getting out of a recession due to the Covid pandemic.
- Restrictions on travel and shipping.
- IP protection.
- Skilled labor management challenges.
- Volatility of the USD in global FX market.
- Stringent financial and export and import laws globally.
- Adaptation to a rapid growth.

VISION: Environmental sustainability and betterment of humankind through technology.

MISSION: To produce engines so powerful, compact, and emission free that they become the preeminent choice for ground, sea, and air applications.

VALUE PROPOSITION

- There is no competitor for Freedom Motors in the market today.
- All detailed specifications are documented and poised for high volume production.
- To produce the most effective & efficient engines in the world, with crucial IP patented by FM or preserved as knowhow.

- All configurations of the engines have been developed, tested, and deployed in applications.
- Freedom Motors acquired the physical and intellectual engine assets of three US companies that had similar type of engines in advanced development.

CORE VALUES:

IMPACT Advancing human progress while preserving natural resources and protecting the environment.
INNOVATION A talented pool of employees.
EMBRACE THE FUTURE Shaping it; not fearing it.
QUALITY Striving for excellence in everything we do.
CONTINUOUS IMPROVEMENT Never being satisfied; challenging everything.

STRATEGIC GOALS (5 years)

Year 1
This year is the most vulnerable year for Freedom Motors (FM). Many entities after successfully coming out of the pandemic debacle, have lacked a practical strategy to sustain and build on. Here are the top goals that need to be addressed.

1. Realize strong financial footing.
2. Protect Intellectual property.
3. Establish US production and enhance R&D.
4. Labor & Talent management.
5. Reinforce customer and partner base.
6. Re-start R&D.

Year 2 and 3

1. Reinforce and enhance customer base.
2. Protect Intellectual property.
3. Establish FM Sales growth.
4. Establish large scale production in Singapore.
5. Enhance revenue streams and gain market position.
6. Establish employee performance and training.
7. Labor & Talent management.
8. Enhance R&D.

Year 4 and 5

1. Protect intellectual property.
2. Enhance sales growth and revenue posture.
3. Enhance large scale production in Singapore.
4. Enhance US production and R&D.
5. Labor & Talent management.

6. Enhance R&D.

CORE ORGANIZATIONAL STAFF DEVELOPMENT

Establishing core teams that are responsible for the KPIs. Each team will have an executive to guide and have oversight.

1. R&D team.
2. Human Resource management team.
3. Financial management team.
4. Production management team.

HUMAN RESOURCE MANAGEMENT

1. Employees hiring.
2. Employee training.
3. Succession Planning.
4. Change management.

THE BASIS FOR A SUCCESSFUL STRATEGY

The 10 Most Critical Factors That Dictate Success

1. The idea.
2. The leader(s).
3. The team.
4. The capital.
5. The plan (including IP protection).
6. The execution.
7. The timing.
8. The crisis response.
9. The marketing.
10. The growth.

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*******END*******