

**MOLLER INTERNATIONAL/FREEDOM MOTORS**

Letter from the President  
by Paul S. Moller

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TO: Moller International/Freedom Motors Newsletter Subscribers

**MOLLER INTERNATIONAL/FREEDOM MOTORS PREPARING FOR ENGINE PRODUCTION**

Since my last newsletter the goal of both MI and FM has been directed exclusively to preparing for engine production. MI has devoted its energy towards completing development of a family of rotary engines that provide FM with the opportunity to acquire a manufacturing partner to produce and distribute these engines. MI is particularly interested in having the 530cc/450cc model put into volume production because single rotor versions of this engine are required for the M200 Neuera while twin rotor versions are required for the Firefly Neuera and FAA certified M400 Skycar.

The results of this prolonged effort are presented here in a combination of figures. We have now completed a family of four different rotor displacements that will result in thirteen different models of our Rotapower® engine (shown in Figure 1). Our smallest engine is 27cc and can easily be widened to 40cc or used in a two-rotor version for the 75cc model.

Applications and Horsepower Range of the Basic Rotapower® Engines			
Max. Horsepower	Displacement	Configuration	Potential Applications
2.5	27cc*	single	Lawnmower, leaf blower, hand-held power tools, trimmers, Tuk-tuk, motor scooter, portable generators. Recreational uses like powered surf boards
4	40cc	single	
7.5	75cc	2-rotors	
20	150cc*	single	
28	200cc	single	
40	300cc	2-rotors	Motorcycles, all terrain vehicles, recreational aircraft, jet skis, and small jet boats. Any high performance use where light weight and small size is important.
50	450cc*	single	
100	900cc*	2-rotors	
150	1350cc*	3-rotors	
200	1800cc*	4-rotors	
270	2700cc*	6-rotors	
65	650cc*	single	
130	1300cc*	2-rotors	

\*Sizes already being developed by Freedom Motors

Same color represents models generated from same basic configuration to minimize tooling changes

Figure 1

Figure 2 show how this model compares with a piston engine of similar horsepower. Figure 3 shows a Rotapower 27cc powering a weed whacker.



Figure 2

piston engine of comparable horsepower. A modular form of this engine has been developed and fully tested on the dyno and in a sit-down PWC. This allows the engine to go from 1 to 6 rotors by changing only the through bolts. A narrower 450cc rotor will be used in the production engine to improve the engine's efficiency and fit better between the 650cc and 300cc displacement models (450cc to 2700cc).

Figure 7 shows a twin-rotor version of our 650cc per rotor Rotapower engine. This is primarily an industrial engine in its present form but could be converted into a modular form, which

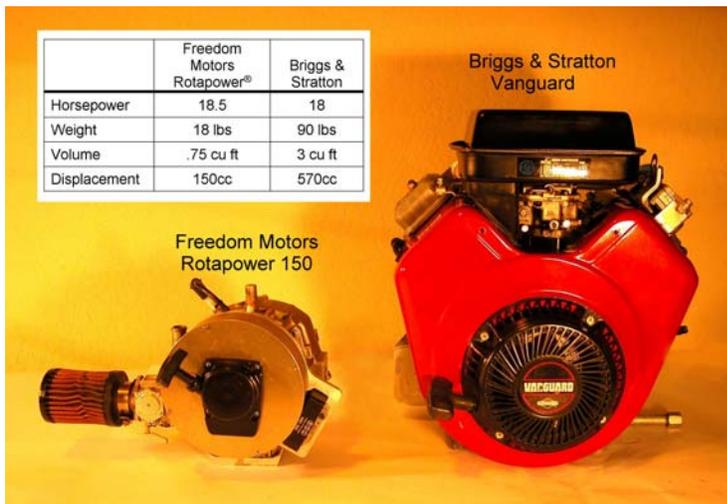


Figure 4

Figure 4 shows our 150cc engine compared to a piston engine of similar power. A widened rotor for this engine would provide a 200cc model, while a twin-rotor version would provide the 300cc model. Figure 5 shows the Rotapower 150cc powering a 12.5 Kw generator set and is compared with a standard piston powered generator set of similar horsepower.

Figure 6 shows one of our technical staff holding the aircraft version of our twin rotor 530cc Rotapower engine, which weighs 60% less than a 2-stroke engine and 75% less than a 4-stroke



Figure 3

would expand its market range and provide the potential to generate over 500 hp.

Finally, Figure 8 shows a compound version of our Rotapower engine which when fully developed has the potential to reduce fuel consumption by 30% over the current design. It has already

demonstrated a 93% reduction in noise (no muffler required) and a 50% reduction in exhaust temperature.

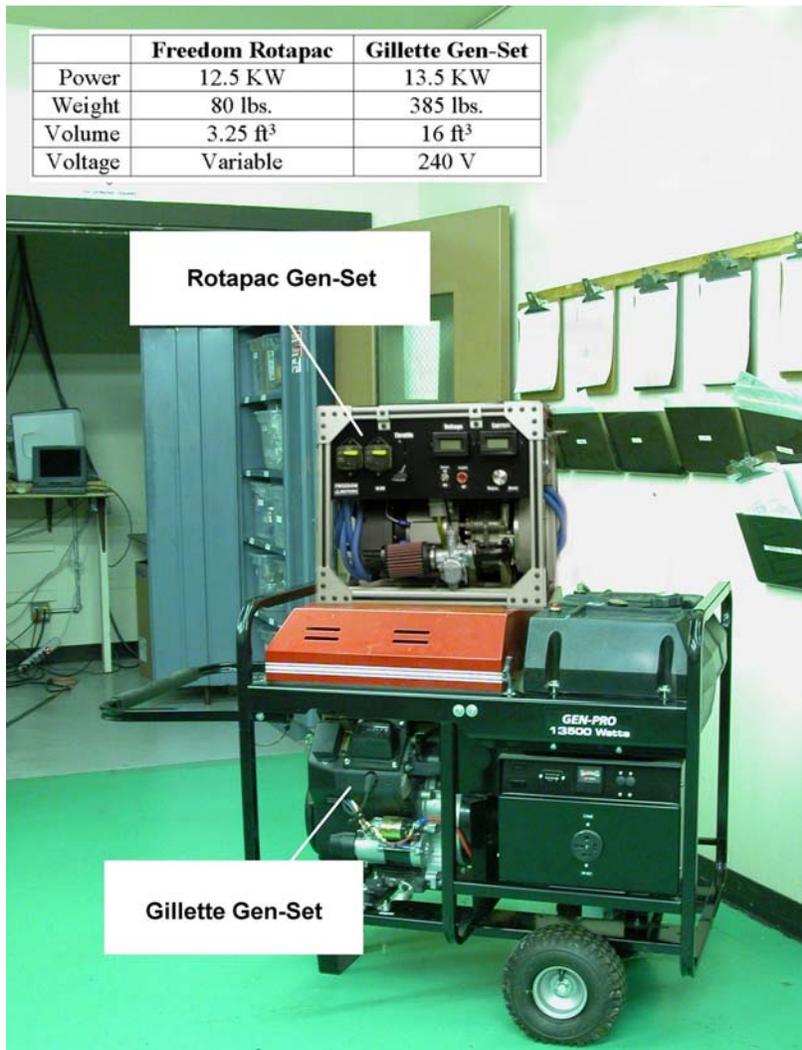


Figure 5

Freedom Motors' goal is to license Rotapower engine production for specific markets (i.e., aircraft, recreational vehicles, hybrid cars, power tools, etc). Freedom acquired exclusive marketing and production rights from Moller for all applications except aircraft and ducted fans. Those rights are retained by Moller as well as the obligation by Freedom to pay a portion of their royalties on engine sales to Moller. Freedom Motors has received letters of intent to purchase over 950,000 engines (~\$1 billion). This is in part due to the Rotapower engine's ability to satisfy the California Air Resources Board's Ultra Low Emissions Vehicle (ULEV) standards on gasoline and the Super Ultra Low Emissions Vehicle (SULEV) standard on alcohol. Much of the interest comes from the emerging hybrid car market. Freedom Motors is presently in final negotiations with three groups who wish to acquire manufacturing and distribution rights for specific markets. Two of these candidates have advanced significant

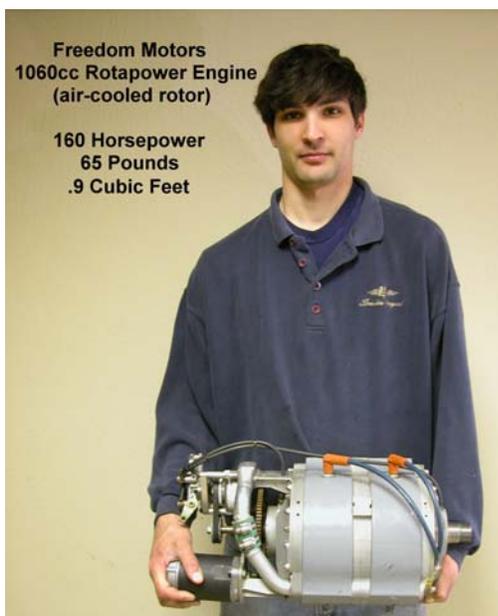


Figure 6

unsecured funds in anticipation of completing a licensing agreement.

For more specific information regarding engine production and our corporate activities by Freedom Motors, please contact Bruce Calkins



Figure 7

at [bruce@moller.com](mailto:bruce@moller.com). You may also visit [www.freedom-motors.com](http://www.freedom-motors.com) or [www.rotapower.info](http://www.rotapower.info) for additional details.



296cc Compound Rotary Engine

Demonstrated 93% reduction in noise,  
reduced exhaust temperature by 50%, and  
and reduced fuel consumption.

Figure 8

### **MOLLER INTERNATIONAL RESPONDS TO DARPA'S CALL FOR A "FLYING CAR"**

Moller International submitted a response to the Defense Advanced Research Projects Agency (DARPA) request for proposal SB091-014, TITLE: Personal Air Vehicle Technology. Subsequently we were notified that our proposal was not selected for funding under this Small Business Innovative Research program, but that there may be further programs that may more adequately address the government's requirements in this area.

Sincerely,  
/s/  
Paul S. Moller, Ph.D.  
President



M200G and M200F "Neuera" fuselages ready  
for engines and electronics.

"SAFE HARBOR" Statement:

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