

Moller Aeronautics

Making New Concepts in Aviation a Reality

Moller Aeronautics (planned name change from Moller International) will retain the exclusive right to manufacture, market, and service Skycar® air taxis and its drone derivatives. Moller International, in an alliance with Freedom Motors, developed the revolutionary Rotapower® engine to power vertical take-off and landing (VTOL) air taxis including the two-person Neuera® 200 and four-person Skycar® 400. These engines were also used to power a variety of drones that were delivered or demonstrated to the US Army, Navy and Air Force. The successful test flights of these air taxis and drones benefited from the use of “distributed propulsion” patented in 1971 by Dr Moller (patent 3,614,030). Virtually all air taxis and drones in worldwide development use distributed propulsion.



Skycar® 400 on ground and in flight



Neuera® 200 on ground and in flight

Why does the world need air taxis

The US, like other parts of the world, has seen its ground-based highway network becoming saturated and increasingly difficult to transport material or people. This is a consequence of the fact that during the last 20 years traffic has increased annually by 1.9% per year while the total accessible roadway network has increased by only 0.6%.

Airborne taxi solution

Travel by airborne taxis is being presented as a meaningful alternative to personal travel by automobile. However, most air taxis now under development are destined for a **4-to-5 passenger ridesharing role** such as travel between hotel and airport. [Morgan Stanley](#) predicts that the advanced air mobility (AAM) market composed of air taxis and drones will total \$1 trillion by 2040 and \$9 trillion by 2050. [Deloitte](#) indicates that this market will see a CAGR of 30.43% between 2025 and 2035. It is estimated that in 2026 over \$6 billion will be spent developing battery powered **ridesharing** air taxis. Today 78.6 % of automotive trips carry one person, 7.5% carry two persons while ridesharing carries a declining 9%. It is reasonable to assume that autonomous **one and two-person air taxis** and multi-purpose **drones** will dominate this future \$9 trillion AAM market.

Technical issues

Distributed propulsion uses multiple powerplants to safely tolerate a single powerplant failure. Collectively these powerplants must produce the high power required to take off and land vertically (VTOL). The one-person Skycar®100 air taxi weighs 1200 lbs and requires 400 horsepower to tolerate a powerplant failure during VTOL or transition to cruise. ([Skycar® 100 Specifications](#)). Batteries/motors have the necessary high power to weight ratio to achieve VTOL but store very little energy. Consequently, the range of battery powered air taxis may be less than 50 miles ([Review of selected advanced air mobility aircraft](#)). Fuel can provide 50 times more energy per pound, however, the lightest piston engine available in aviation produces less than **one horsepower per pound** which eliminates its use as the sole power source for air taxis during VTOL and transition to cruise. The revolutionary Rotapower rotary engine developed by Moller International and Freedom motors based on the Wankel design, produces over **three horsepower per pound** making it a viable powerplant. However, creating a hybrid version by the addition of batteries has numerous operational benefits.

Air taxis should meet certain design and performance requirements to maintain their utility in an urban environment. These include:

- Smaller than city parking space with wings folded. (<20 ft long and 8.5 ft wide).
- Utilize sustainable-fuel powered engines during cruise assisted by batteries during VTOL and transition.
- Meet city noise ordinance (88 dba@25 ft).
- Cruise speed (200 mph).
- Automotive range (500 miles).
- Initial FAA approval under Mosaic rule (Part 91) allows sales for private use.
- Subsequent FAA certification to operate under Part 135 to allow commercial use.
- Operate autonomously (by 2030).

Skycar® solution



Skycar® 100 X



Skycar® 200

The **Rotapower® engine** developed by Moller International and Freedom Motors has made VTOL capable air taxis powered by engines alone possible. However, adding battery power (hybrid version) can also help provide boost and back-up power during VTOL and transition. One and two-person air taxis have the potential to meet the above requirements while 4-to-5-person air taxis powered by batteries alone will have difficulty meeting most of them.

Economics of travel by autonomous air taxi

For Skycar® and other one and two-person air taxis to make up a large portion of the projected \$1 trillion AAM market by 2040, production may need to approach present automotive levels. Economy of scale could then reduce the selling price to less than \$100,000 in today's dollars with trip cost either as an owner or autonomous air taxi user in the range of \$1 per passenger mile. By contrast, 4-to-5 person ridesharing air taxis could cost \$5 to \$7 per passenger mile that will not decrease due to their limited utility together with high maintenance and production cost. ([The Future of Advanced Air Mobility Aircraft](#)).

Addendum

The Moller Aeronautics business plan initially concentrates on producing promotional versions of the Skycar100 to help with fundraising while concurrently manufacturing revenue generating Skycar derivative drones. The timetable for developing both is similar. Skycar drones can be sold without significant government oversight while the Skycar air taxi will need to undergo progressive development as it moves through the various phases of the FAA approval process under part 22 followed by FAA certification that would allow commercial operations under part 135. FAA approval under part 22 allows private sales and should take about three years and cost \$250,000 to \$300,000. FAA certification under part 135 will allow Skycar sales to generate revenue through commercial sales and use. This could take two or more additional years and up to \$500,000. The overlapping effect of having Skycar100 air taxis in development concurrent with the company's drones in commercial and military use will significantly reduce the flight hours required to establish Skycar reliability which is key to both its FAA approval and certification. Videos, interviews and various articles are available on YouTube and other Websites for example:

- **YouTube Mollerrotapower**, <https://www.youtube.com/@mollerrotapower>
- **Flying saucers on earth: The Moller M200X explained** (<https://www.youtube.com/watch?v=MuneWjhsn1c>)
- **Moller-Ted talk** (https://www.ted.com/speakers/paul_moller)
- **Father of the flying car** (<https://www.youtube.com/watch?v=OTs9pK8gmbY>)
- **Sactownmag.com>meet-george-jetson** (<https://www.sactownmag.com/meet-george-jetson/>)
- **Skycar-Huffington post, Fast company-Skycar, Skycar developer to help define requirements for "highways in the sky"** <https://www.huffpost.com/entry/techfuture-hold-on-paul-m b 5092345>) and
- **Paul Moller-David Pakman show** (<https://www.youtube.com/watch?v=i4j4nUSyLcU>)

*White papers are available on the freedom-motors.com website in the header under docs. The following are considered most relevant: **The five investor documents and the first seven white papers.***

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