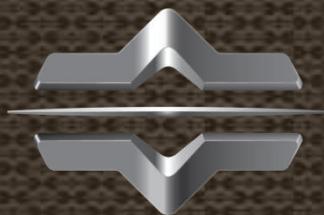


# PAL-V

## PRESS FOLDER

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a joy to drive, a joy to fly



# The World's First Flying Car Production Model Comes to Life

31<sup>st</sup> of January 2018

On the 6th & 7th of March (press only) and between the 8th and 18th of March (public days) at the Geneva Motor Show at booth 1210, PAL-V will unveil the world's first flying car production model — the PAL-V Liberty. Not only a decisive milestone for PAL-V, but also a historic breakthrough in the evolution of flying cars altogether.

# Separating Pioneers from Dreamers

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**Release:** 31<sup>st</sup> of January 2018

About the importance of this milestone, Robert Dingemanse, CEO of PAL-V, stated: "The production model is the moment of truth. The moment where the wall between fiction and facts is torn down. A production model is the last stage in the R&D process before starting full production and delivery. All certifications required for commercialization will be granted on the basis of this production model. It is the pivotal point that separates pioneers from dreamers."

The certification not only guarantees the safety of the flying car but also is the approval that the vehicle can be driven on the roads and flown in the air. Dingemanse said: "Once full certification is granted in 2019 we will hand over the keys of the PAL-V Liberty to our first customers."

The past years, PAL-V concentrated all efforts on perfecting its design and setting up the production process and supply chain. Dingemanse is now proud to state that with the PAL-V Liberty, he and his team successfully brought The Netherlands back in the league of aircraft manufacturers.

Immediately after the Geneva Motor Show, the PAL-V Liberty will be going through the last step of the certification process: compliance demonstration. "It takes a lot of testing to prove

that the PAL-V Liberty complies with the regulations": said Mike Stekelenburg, PAL-V's Chief Engineer. He continues: "Our design philosophy of complying with existing road and air regulations saved us many years in time to market. Instead of opting for a flying car concept on the basis of not yet existing or immature technologies, requiring new regulations, we deliberately chose to design, engineer and manufacture a flying car with proven technologies. This approach enables a realistic and imminent first product delivery date."

In the meantime, PAL-V's pioneer clients are building experience at flying schools around the globe in preparation for deliveries commencing in 2019. For them, door to door flydriving is closer than ever.

More information and high res images at [www.PAL-V.com](http://www.PAL-V.com)

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Background information:

About PAL-V

PAL-V International B.V., the company that initiated the development of the PAL-V, is located in Raamsdonksveer, The Netherlands. The company was founded in 2007 to commercialize the concept developed since 1999. The management consists of a team of experienced Dutch entrepreneurs with expertise in aviation, automotive, research, and marketing. PAL-V succeeded in gathering the best talent available. Testing its "proof of concept" vehicle for driving in 2008/2009 and for flying and driving in 2011/2012 it has proven technical feasibility and certifiability within the existing regulatory framework. The company is funded by a group of professional and private investors and also received funding from the Dutch Ministry of Economic Affairs. Three Dutch ministries are supporting the project based on its technical innovation and economic potential.



# Questions & Answers

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Can you tell more about the engine solution?

The dual engine propulsion drive train is based on two fully certified airplane engine from Rotax, one of the leading manufacturers in aviation engines.

What about safety?

The PAL-V LIBERTY has been developed by using proven state-of-the-art technologies from the aerospace and automotive industries. In the air, the underlying gyroplane technology guarantees a stable flying platform that supports safe landing even in the very unlikely event of a total power failure. Which in itself is very unlikely thanks to its unique two engine propulsion solution.

A gyroplane as such is already a very safe way of flying. However by a rigid focus on flight safety PAL-V has taken it to the next level. By making small compromises on specification it created the safest gyroplane ever built.

Unlike most small airplanes and gyroplanes the PAL-V LIBERTY is certified under the very strict safety regime of EASA (Europe) and FAA (USA). Many countries in the world follow the same rules.

On the road, the PAL-V LIBERTY is complying with the applicable road safety requirements.

An inherent safety aspect is that in case of bad weather conditions you can drive (part of) your journey. This does make your planning much more certain but also increases your safety options dramatically.

Will regulators allow the use of PAL-Vs?

The PAL-V LIBERTY is designed within the current certification and regulations frameworks for the vast majority of countries in the world. No rules or regulations need to be changed to be allowed to use the vehicle.

What specs does it have?

Please view:

<http://www.pal-v.com/>

Why is the gyroplane concept chosen?

Safety first: in case of engine failure the gyroplane can be landed normally in a very small area equivalent to a tennis court. Landing without an engine can be done with +/- 30 km/h (18mph) ground speed on a very small spot (30 meters or 100ft). This makes emergency landing, in combination with the unique double redundant drive train of the PAL-V LIBERTY, multiple times safer than a comparable aircraft or helicopter.

*Advantages compared to a conventional airplane:*



Safety again: contrary to fixed-wing airplanes, it cannot stall and crosswind landings are easier and safer than with a fixed wing airplane.

Convenience and comfort: in turbulent air it still flies smoothly with excellent stability due to its high rotor speed. You will only experience 20% of the turbulence of a comparable fixed wing aircraft.

Versatility: Because a gyroplane can fly very slowly, it needs very little space to land. Take-off distance ranges from only 90m to 200m (300ft-650ft). As it deals much better with turbulence and cross wind you can safely fly a PAL-V LIBERTY while fixed wing airplanes have to stay on the ground.

Fun and effectiveness: wide speed range, with a low minimum horizontal speed (from 50 km/h up to 180 km/h or 30mph-112mph). The PAL-V LIBERTY exhibits very positive slow flight envelope characteristics, even slow glides are possible up to safe vertical descends.

#### *Advantages compared to a helicopter:*

Safety and ease of operation: a gyroplane is very easy and safe to fly because it is a stable mechanical system. A comparable helicopter is the opposite: as it is an unstable system, kept in the air by the skills of the pilot using both hand and feet. A helicopter is much harder to fly and therefore much riskier and challenging to operate.

Versatility: unlike a helicopter, a gyroplane cannot take off or land vertically. Although you may think this to be an important limitation, in

practice it is NOT thanks to the driving capability of the PAL-V LIBERTY. Since you can drive the PAL-V LIBERTY to your destination, it is much more useful and versatile even than a helicopter: taking off nearby is good enough and it does not require anybody to stay behind to guard your aircraft at the landing spot. Also landing a helicopter at the spots where you would like to land is very often not allowed or possible because of noise and safety, making helicopter use in practice very cumbersome. Therefore helicopters are not as practical and useful as a PAL-V LIBERTY.

Cheaper to own and operate: a PAL-V Gyroplane has significant lower cost of ownership compared to a helicopter, yet can accomplish most missions that a helicopter can plus other ones. Since you park it in your garage costly hangar space it not required.

#### **What happens when more PAL-Vs take to the sky?**

The great news is that because PAL-V is designed within today's existing regulatory framework, all the tools are in place for safe management of transportation in the sky including 2nd Generation air traffic control. Rules and regulations are in place under the International Civil Aviation Organization (ICAO) to allow the use of the first PAL-Vs LIBERTYs.

#### **Is it possible to take off and land everywhere?**

No. Apart from the fact that this is not allowed by law, the PAL-V needs a space for take-off measuring



about 90-200 by 20 meters (100ft-650ft by 60ft) without surrounding obstacles. In practice all small airstrips, aerodromes, glider sites and/or ultralight airfields will suffice. The PAL-V LIBERTY can operate from either concrete or grass airstrips. As the PAL-V popularity increases, it is expected that more and more small uncontrolled airstrips will be created. Many countries also allow for special permits on private property.

### Do people need a license to fly the PAL-V?

Yes, they certainly do need a license to fly. This can be obtained through one of the many flight schools in the world. To be able to operate an airplane you will need some basic knowledge of navigation, instruments, meteorology, aerodynamics and performance. All pilots of aircraft need training and the PAL-V LIBERTY is – for the aviation aspect – no exception. To acquire a license people have to pass a theoretical exam and have a reasonable amount of training first with an instructor and later as a single pilot (solo) to learn to fly a gyroplane. The gyroplane license can usually be obtained within 30 to 40 hours of training, depending on skill and talent.

### Will such a “flying car” receive certification for road and sky?

The PAL-V LIBERTY is designed within existing certification requirements on the road as

well as in the sky. For flying, CS-27 (Europe) and FAR-27 (USA) are the standards on which the Type Certificate is based. For driving, the road legislation directives of the European Commission and National Highway Transportation Safety Administration (NHTSA) standards are used. The PAL-V ONE "proof of concept" prototype confirmed that the PAL-V LIBERTY can be built to meet these standards without exemptions.

### Where will it be produced?

The PAL-V LIBERTY will be assembled in the Netherlands. Specific parts and systems will be manufactured by leading companies from a number of countries.

### What about noise?

The noise will be comparable to a small fixed wing plane. It will be much less than a helicopter.

### How long does it take to change modes?

To convert from drive to fly mode or vice versa will take 5-10 minutes.

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