



Pipistrel Velis Electro
*The World's First Ever Certified
Electric Aircraft*
Available now in the Benelux

Information Pack

Velis Electric Aircraft, Certified by EASA.

More detailed information and photos are available on the Pipistrel Aircraft website. Contact us on +31-6-50 60 38 39 to discuss your queries.

1. What is the Velis Electro Aircraft?

The Pipistrel Velis Electro is the world's first fully electric aeroplane ever to receive type certification. The two-seater, intended primarily for pilot training, is a game-changing aircraft in terms of technological innovations and cost-efficiency. Its EASA certification paves the way for the future of environmentally sustainable, emission-free aviation.

Conceived as a fundamental part of the 'Velis Training System', the Velis Electro is designed to be simple to operate and maintain, without compromising safety.



TYPE CERTIFICATE

EASA.A.573

This certificate is issued by the European Union Aviation Safety Agency (EASA) in accordance with Regulation (EU) 2018/1139, in particular Article 77 (1) (e) thereof and Commission Regulation (EU) No. 748/2012 to

PIPISTREL VERTICAL SOLUTIONS d.o.o.

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EASA.21J.524

and certifies that the product type design listed below complies with the applicable Type Certification Basis and, if applicable, environmental protection requirements when operated within the conditions and limitations specified on the associated Type Certificate Data Sheet Number: **EASA.A.573**

Type Design: Virus SW 121

Model **Initial Certification Date***

Virus SW 121 18 April 2016

Virus SW 128 (Velis Electro) 10 June 2020

*Note: With regard to a product for which a type certificate was issued before 28 September 2003 by an EASA Member State, the Initial Certification Date refers to the date of issuance of the initial type certificate of this product by the competent authority of that State.

For the European Union Aviation Safety Agency

Cologne, Germany, 10 June 2020

Dominique ROLAND
Head of Department
General Aviation



An Agency of the European Union

Task Number: 10006366
PIPISTREL VERTICAL SOLUTIONS d.o.o. - 309146

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2. Which Electric Motor is installed in the Velis ?

The motor is the Pipistrel's type certified electric engine, the 57.6kW liquid cooled electric engine provides power to the aircraft. This motor is developed and built in Slovenia in co-operation with EMRAX and EMSISO.

The Velis Electro delivers power instantly and without hesitation – a simplified user interface in a cockpit that maintains the same look-and-feel of its conventionally powered siblings. The revolutionary powertrain is entirely liquid-cooled, including the batteries, and demonstrated the ability to withstand faults, battery thermal runaway events, and crash loads as part of the certification process.

3. What is the Maintenance for the Velis?

The reduced number of moving parts in the electric motor dramatically decreases maintenance costs and the risk of malfunctions is further minimized thanks to its built-in continuous health-monitoring system.

The fully composite and monocoque type structure of the aircraft eliminates corrosion and reduces routine maintenance and inspection costs.

4. What about reliability and operating costs ?

The paucity of moving parts and lack of vibrations in the airframe increase reliability. This enhanced reliability allows the Velis Electro to have more than double the lifespan of powertrain elements in comparison to the previous generation of electric aeroplanes.

The overall result of all these breakthrough innovations is a drastic reduction in the operating costs, significantly contributing to the affordability of pilot training.

5. How quiet and clean is it?

Featuring noise levels of only 60 dBa, Velis Electro is considerably quieter than other aeroplanes and produces no combustion gases at all. Its revolutionary powertrain is entirely liquid-cooled, including the batteries, and demonstrated the ability to withstand faults, battery thermal runaway events, and crash loads as part of the certification process. Velis Electro can operate in cold, hot and rain.

6. How safe is it?

As part of the EASA Type Certification, Pipistrel demonstrated that Velis Electro achieves the highest levels of safety, even surpassing those required for conventionally powered aircraft. Velis Electro is a full-electric derivative of the proven Virus SW 121, which is already type certified by the European Union Aviation Safety Agency (TC No EASA.A.573).

It is equipped with a Pipistrel type certified electric engine E-811-268MVLC (TC No. EASA.E.234), developed with partners EMRAX and EMSISO, and Pipistrel's three-bladed composite fixed pitch propeller P-812-164-F3A.

The 57.6kW (77 hp) liquid cooled electric engine provides power to the aircraft.

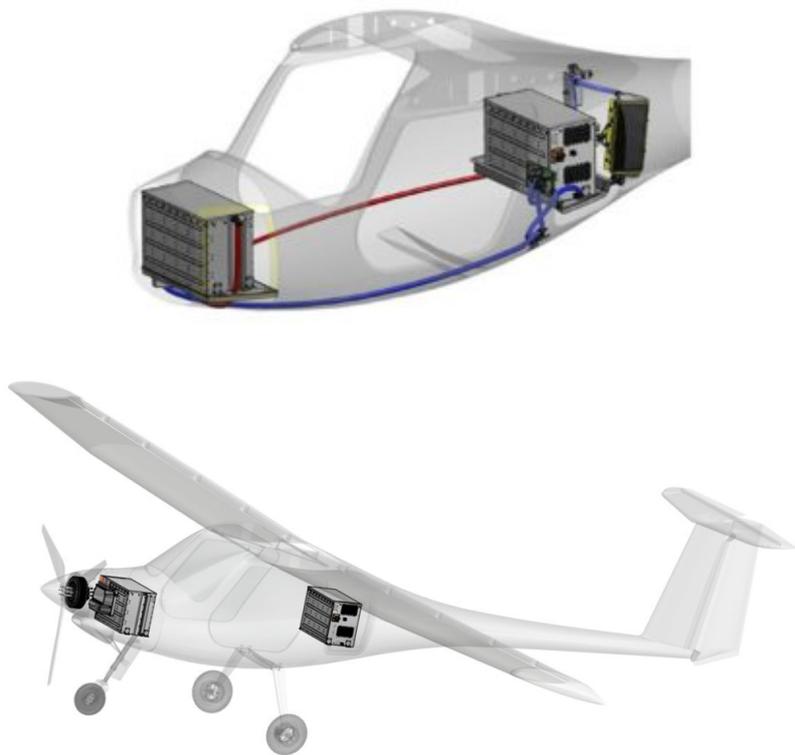
7. Which Batteries are used in the Velis ?

The power is delivered by 345 Volts D.C. electric system built around a liquid-cooled, in-house developed, high performance battery system, which includes two Pipistrel PB345V124E-L batteries connected in parallel, installed in a redundant 2-unit arrangement, total nominal capacity 24.8kWh.

The battery packs are crashworthy and have thermal runaway inhibiting protections.

They are also HIRF/EMI tolerant. (High Intensity Radio Frequency / Electro Magnetic Interference)

One battery pack is located in the nose of the aeroplane and the second behind the cabin. This ensures redundancy of the power source: in case of battery failure, the malfunctioning battery would get automatically disconnected from the system. A single battery is capable of standalone operation and has enough power capability to support climbing and continuation of flight.



8. How long does it take to charge the batteries?

The charger provided with each aircraft is a portable charger ranging from 3 kW to 20 kW charging power. The portable charger weighs about 45 kg. This plugs into a mains wall socket of single phase or 3 phase AC supply. The output cable is plugged into the aircraft on the nose cowling into a charge input socket.

The Sky Charger stand-alone charger shown below is capable of charging two electric aircraft at the same time.

Charge time will vary upon battery charge status and electrical power availability from the network. The charger is a world-wide charger and a portable unit which can be connected to any 110V and 240V, 50 Hz or 60 Hz electrical grid or the Solar Trailer.

Power setting	Phases	VAC	Hz	Charging times approx.
3kW	1	85-265	45-65	8 hours
10kW	1	85-65	45 -65	2 hours 30 min
15kW	1	85 – 65	45 – 65	1 hour 45 min
10 kW	3	380	45 -65	2 hours 30 min
20 kW	3	380	45 – 65	1 hour 10 min



9. What is the flight endurance and characteristics of the Velis?

The Velis Electro is designed for circuit training with a flight endurance of 50 minutes with a VFR reserve. If you plan to fly to another airfield, that airfield must have a charger available to recharge after you land.

Weights	kg
<i>Basic empty</i>	<i>428</i>
<i>Max take off</i>	<i>600</i>
<i>Payload</i>	<i>172</i>
Performance	Kt
<i>Stall speed clean</i>	<i>51</i>
<i>Stall with flaps</i>	<i>45</i>
<i>Cruise speed (35kW)</i>	<i>90</i>
<i>Max horizontal speed</i>	<i>98</i>
<i>VNE</i>	<i>108</i>
<i>Best climb speed</i>	<i>75</i>
<i>Best glide ratio</i>	<i>15:1</i>
<i>Service ceiling</i>	<i>12000 feet</i>

For more details see www.pipistrel-aircraft.com

Contact in Benelux :-

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