Exemption No. 22011

UNITED STATES OF AMERICA
DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

In the matter of the petition of

TEXTRON EAVIATION

for exemption from §§ 21.181(a)(3); 21.190(a); 43.3(c); 43.7(g); 61.89(c); 61.303(a); 61.315(a); 61.411(a); 61.415; 61.429(b); and 65.107(b) and (c) of title 14, Code of Federal Regulations

Regulatory Docket No. FAA-2022-1713

GRANT OF EXEMPTION

By letter dated November 22, 2022, and supplemental information provided on June 26, 2023, Mr. Antonio LaCorte, Director, External Affairs, Textron eAviation, 5701 E Pawnee Ave (Bldg B-88), Wichita, Kansas 67218 petitioned the Federal Aviation Administration (FAA) for an exemption from §§ 21.181(a)(3); 21.190(a); 43.3(c); 43.7(g); 61.89(c); 61.303(a); 61.315(a); 61.411(a); 61.415; 61.429(b); and 65.107(b) and (c) of Title 14, Code of Federal Regulations (14 CFR). The proposed exemption, if granted, would allow the Textron Model Virus SW 128 light-sport airplane, known as the Velis Electro, to be certificated, operated, and maintained under the regulations applicable to aircraft issued a special airworthiness certificate in the light-sport category while incorporating an electric propulsion system.

Petition for Exemption

The petitioner requests relief from the following regulations:

Section 21.181(a)(3) prescribes, in pertinent part—

(a) Unless sooner surrendered, suspended, revoked, or a termination date is otherwise established by the FAA, airworthiness certificates are effective as follows;

(3) A special airworthiness certificate in the light-sport category is effective as long as–

(i) The aircraft meets the definition of a light-sport aircraft.

Section 21.190(a) prescribes, in pertinent part—

(a) Purpose. The FAA issues a special airworthiness certificate in the light-sport category to operate a light-sport aircraft, other than a gyroplane.

Section 43.3(c) prescribes, in pertinent part—

(c) The holder of a repairman certificate may perform maintenance, preventive maintenance, and alterations as provided in part 65 of this chapter.

Section 43.7(g) prescribes, in pertinent part—

(g) The holder of a repairman certificate (light-sport aircraft) with a maintenance rating may approve an aircraft issued a special airworthiness certificate in light-sport category for return to service, as provided in part 65 of this chapter.

Section 61.89(c) prescribes, in pertinent part—

(c) A student pilot seeking a sport pilot certificate must comply with the provisions of paragraphs (a) and (b) of this section and may not act as pilot in command–

(1) Of an aircraft other than a light-sport aircraft;

(2) At night;

(3) At an altitude of more than 10,000 feet MSL or 2,000 feet AGL, whichever is higher;

(4) In Class B, C, and D airspace, at an airport located in Class B, C, or D airspace, and to, from, through, or on an airport having an operational control tower without having received the ground and flight training specified in § 61.94 and an endorsement from an authorized instructor;

(5) Of a light-sport aircraft without having received the applicable ground training, flight training, and instructor endorsements specified in § 61.327 (a) and (b).

Section 61.303(a) prescribes, in pertinent part—

(a) Use the following table to determine what operating limits and endorsement requirements in this subpart, if any, apply to you when you operate a light-sport aircraft. The medical certificate specified in this table must be in compliance with § 61.2 in regard to currency and validity. If you hold a recreational pilot certificate, but not a medical certificate, you must comply with cross-country requirements in § 61.101(c), even if your flight does not exceed 50 nautical miles from your departure airport. You must also comply with requirements in other subparts of this part that apply to your certificate and the operation you conduct.

If you hold	And you hold	Then you may operate	And
(1) A medical certificate	(i) A sport pilot certificate,	(A) Any light-sport aircraft for which you hold the endorsements required for its category and class	(*1*) You must hold any other endorsements required by this subpart, and comply with the limitations in § 61.315.
	(ii) At least a recreational pilot certificate with a category and class rating,	(A) Any light-sport aircraft in that category and class,	(*1*) You do not have to hold any of the endorsements required by this subpart, nor do you have to comply with the limitations in § 61.315.
	(iii) At least a recreational pilot certificate but not a rating for the category and class of light sport aircraft you operate,	(A) That light-sport aircraft, only if you hold the endorsements required in § 61.321 for its category and class,	(*1*) You must comply with the limitations in § 61.315, except § 61.315(c)(14) and, if a private pilot or higher, § 61.315(c)(7).
(3) Neither a medical certificate nor a U.S. driver's license	(i) A sport pilot certificate,	(A) Any light-sport glider or balloon for which you hold the endorsements required for its category and class	(*1*) You must hold any other endorsements required by this subpart, and comply with the limitations in § 61.315.
	(ii) At least a private pilot certificate with a category and class rating for glider or balloon,	(A) Any light-sport glider or balloon in that category and class	(*1*) You do not have to hold any of the endorsements required by this subpart, nor do you have to comply with the limitations in § 61.315.
	(iii) At least a private pilot certificate but not a rating for glider or balloon,	(A) Any light-sport glider or balloon, only if you hold the endorsements required in § 61.321 for its category and class	(*1*) You must comply with the limitations in § 61.315, except § 61.315(c)(14) and, if a private pilot or higher, § 61.315(c)(7).

Section 61.315(a) prescribes, in pertinent part—

(a) If you hold a sport pilot certificate you may act as pilot in command of a light-sport aircraft, except as specified in paragraph (c) of this section.

Section 61.411(a) prescribes, in pertinent part—

(a) Use the following table to determine the experience you must have for each aircraft category and class:

If you are applying for a flight instructor certificate with a sport pilot rating for . . .	Then you must log at least . . .	Which must include at least . . .
(a) Airplane category and single-engine class privileges,	(1) 150 hours of flight time as a pilot,	(i) 100 hours of flight time as pilot in command in powered aircraft, (ii) 50 hours of flight time in a single-engine airplane, (iii) 25 hours of cross-country flight time, (iv) 10 hours of cross-country flight time in a single-engine airplane, and (v) 15 hours of flight time as pilot in command in a single-engine airplane that is a light-sport aircraft.

Section 61.415 prescribes, in pertinent part—

If you hold a flight instructor certificate with a sport pilot rating, you may only provide flight training in a light-sport aircraft and are subject to the following limits:

(e) You may not provide training to operate a light-sport aircraft in Class B, C, and D airspace, at an airport located in Class B, C, or D airspace, and to, from, through, or at an airport having an operational control tower, unless you have the endorsement specified in § 61.325, or are otherwise authorized to conduct operations in this airspace and at these airports.

(g) You may not provide training in a light-sport aircraft with a V_H greater than 87 knots CAS unless you have the endorsement specified in § 61.327 (b), or are otherwise authorized to operate that light-sport aircraft.

(h) You may not provide training on the control and maneuvering of an aircraft solely by reference to the instruments in a light sport airplane with a V_h greater than 87 knots CAS unless you meet the requirements in § 61.412.

Section 61.429(b) prescribes, in pertinent part—

(b) You must comply with the limits specified in § 61.415 and the recordkeeping requirements of § 61.423.

Section 65.107(b) and (c) prescribe, in pertinent part—

(b) The holder of a repairman certificate (light-sport aircraft) with an inspection rating may perform the annual condition inspection on a light-sport aircraft:

(1) That is owned by the holder;

(2) That has been issued an experimental certificate for operating a light-sport aircraft under §21.191(i) of this chapter; and

(3) That is in the same class of light-sport-aircraft for which the holder has completed the training specified in paragraph (a)(2)(ii) of this section.

(c) The holder of a repairman certificate (light-sport aircraft) with a maintenance rating may—

(1) Approve and return to service an aircraft that has been issued a special airworthiness certificate in the light-sport category under § 21.190 of this chapter, or any part thereof, after performing or inspecting maintenance (to include the annual condition inspection and the 100-hour inspection required by § 91.327 of this chapter), preventive maintenance, or an alteration (excluding a major repair or a major alteration on a product produced under an FAA approval);

(2) Perform the annual condition inspection on a light-sport aircraft that has been issued an experimental certificate for operating a light-sport aircraft under § 21.191(i) of this chapter; and

(3) Only perform maintenance, preventive maintenance, and an alteration on a light-sport aircraft that is in the same class of light-sport aircraft for which the holder has completed the training specified in paragraph (a)(3)(ii) of this section. Before performing a major repair, the holder must complete additional training acceptable to the FAA and appropriate to the repair performed.

The petitioner supports their request with the following information:

This section summarizes the petitioner's request. The complete petition is available at the Department of Transportation's Federal Docket Management System, on the Internet at www.regulations.gov, in Docket No. FAA-2022-1713.

The petitioner requested the FAA consider the technological advancements in aviation propulsion to include electric batteries and electric motors, unlocking their full potential and recognize the substantial benefits to the public. The petitioner states that considering definitions such as "a single, reciprocating engine, if powered" has the potential to create barriers to entry, place a significant regulatory burden on this type of aircraft, and miss the unique opportunities proven aircraft like the Velis Electro provide the FAA without unduly risking the safety of the National Airspace System (NAS). They state that it is imperative that the global aviation community leverage precedent-setting work such as that which has been demonstrated with the Velis Electro, to include its Light Sport Aircraft (LSA) Certification with global regulatory authorities, to advance opportunities for initial pilot training at a reduced cost and reduced impact to the environment. The petitioner states that operationalizing an aircraft such as the Velis Electro through the Special Airworthiness Certificate process would not only allow for more timely pilot training opportunities that are cost-efficient and ecologically sensitive using zero emission electric airplanes but provide the added benefit of providing information to the FAA, which can aid data-based promulgation of regulations such as the Modernization of Special Airworthiness Certificates (MOSAIC) rule addressing electric aircraft.

The petitioner states that requesting airworthiness certification in the light-sport category from the FAA in lieu of pursuing type certification is not a novel concept, and the FAA has previously granted exemptions (Exemptions 8707, 10299, 10829, 15422, 15422A, 15422B, 16648A, 10829A, and 10829B) to permit this. The petitioner notes that such exemptions have allowed (1) an aircraft manufacturer to use floats with repositionable gear on its amphibious light-sport aircraft; (2) allowed ICON Aircraft a maximum takeoff weight of 1,500 pounds (1,680 pounds per the exemption) on its light-sport aircraft; and (3) allowed Terrafugia to have a vehicle in the transition street-legal airplane configuration to be certified in the light-sport category with a maximum takeoff weight of 1,800 pounds.

The petitioner states that due to current endurance limitations of the Velis Electro, students would be trained to fly aircraft with reciprocating engines in addition to the Pipistrel Velis Electro to accomplish 14 CFR part 61 certificate requirements such as cross-country flights. The petitioner states the Pipistrel "Alpha" Electro is authorized for flight training in Australia and Switzerland. The Pipistrel Alpha Electro operating in flight training operations in Perth, Australia has been in service since January 2018, trained about 50 students, and logged over 150 hours of incident-free training.

The aircraft is authorized for Australian Special Light Sport airworthiness certification under existing regulations from CASA through CASA Advisory Circulars 21-41, *Light Sport Aircraft Certification of Airworthiness* and 21-42, *Light Sport Aircraft Manufacturers' Requirements*. Other examples include the use of the Pipistrel Velis Electro in France to conduct flight training using the same model of takeoff, landing and pattern work using the Pipistrel Velis Electro and transferring to a traditional piston type aircraft with more endurance for cross-country flights. The petitioner states that a student pilot in the United States recently accomplished portions of a check-ride using the Pipistrel Velis Electro Aircraft.

The petitioner states that this exemption request is an opportunity to not only prepare students for aviation and aerospace careers using cutting edge and cost-effective technology but also to collaborate with the FAA to study and address training and qualification needs specific to the electric aviation industry. The petitioner adds that the infusion of this new technology and cost-effective means to pilot qualification has the incalculable potential to attract new pilots and maintainers to the field of aviation which ultimately addresses the current national pilot shortage. Furthermore, the petitioner states it will coordinate and continuously update its curriculum to take advantage of new guidance and regulations proposed and implemented by the FAA.

General Aircraft Description

The petitioner provided the FAA with a generalized description of the Velis Light-Sport aircraft. They state that the Velis is a Light-Sport aircraft with an MTOW of 1320lbs, cruise speed of 90 KCAS at 35kW of power through a Pipistrel E-811 EASA Type-Certified brushless electric motor; the electric motor produces 2270 RPM at 57.6kW MTOP. The aircraft is capable of grass/asphalt takeoff run, has up to 50 minutes of endurance (plus a VFR reserve), a 15:1 glide ratio, and a service ceiling of 12,000ft. The aircraft's power is delivered by a 345 VDC 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, with a total nominal capacity of 24.8 kWh.

Public Benefit of Exemption

The petitioner states that granting this exemption would allow the Velis Electro to obtain a Special Airworthiness Certificate under 14 CFR § 21.190 and allow the aircraft to be operated for training compensation under 14 CFR § 91.327 (a)(2), which benefits the public by enabling the adoption of a lower cost, quieter, sustainable aviation solution for initial flight training.

Lower Cost and Risk of Training and Operations

The petitioner states they conducted a high-level comparative analysis between the Velis Electro and the Cessna 172, which is typically used for flight training purposes. They state that the Velis Electro is estimated to be 66% less in overall purchase price than the Cessna 172. In addition, they estimate the Velis Electro to have a 75% reduction in cost per flight training hour, over the Cessna 172. The petitioner also states that the Velis Electro presents an opportunity to leverage certification work completed by other entities that have shown its reliability and airworthiness in this category of aircraft.

The petitioner contends that the simplistic design and absence of mechanical mechanisms in the electric motor alone provide for a reduced risk of failures due to fatigue failure due to wear. They state that the Velis Electro also incorporates the elements of gliders where its glide ratio is 15:1 over that of a Cessna 172 at ratio of 9:1. The design incorporates elements such as flaperons, which the petitioner claims will provide training pilots more control authority at critical times of flight, and since the Velis Electro is endurance limited, training operations using this aircraft would typically be confined to airdrome areas.

Reduced Aircraft Noise and Operating Emissions

The petitioner states that the Velis Electro aircraft emits no toxic air contaminants or carbon emissions, which is important in areas such as California's San Joaquin Valley, which is designated as a Federal non-attainment area for ozone and particulate matter.

The petitioner states that the FAA has been researching and addressing concerns about aircraft noise for decades, to include new and novel technologies like Unmanned Aircraft Systems that use electric propulsion. According to the petitioner, the use of the Velis Electro aircraft for flight training will provide relief by reducing the noise impact in training areas and surrounding communities. The petitioner states that during the EASA certification of the Velis Electro TCDS Issue 05 (Noise), the aircraft was recorded to be 60 dB(A) at takeoff; for comparison, the EASA certification TCDS Issue 05 (Noise) for the Cessna 172s Skyhawk was recorded at 78.2 dB(A) during takeoff.

The petitioner also states that there is no risk of hazmat issues from oil or gas releases. According to the petitioner, an ongoing challenge with piston and turbine powered aircraft is that

fuels are inherently hazardous. They suggest that avgas has multiple classified hazards including but not limited to that it is a flammable liquid, an aspiration hazard, causes skin corrosion/irritation, has specific target organ toxicity (single exposure), carcinogenicity, reproductive toxicity, and is hazardous to the aquatic environment with chronic toxicity. Airports prohibit dumping and spilling avgas on the ground to prevent contamination. The petitioner states that the Velis Electro Aircraft does not use avgas, which eliminates these concerns.

Safely Training the Public while Increasing Pilot Availability

The petitioner states that FAA Advisory Circular 90-109A, *Transition to Unfamiliar Aircraft*, addresses the transition to these aircraft and that enabling flight training in the aircraft will allows operators to safely continue generating data regarding the impact of electric powerplants upon flight training and air quality. They state that the aircraft designated in this petition represent an opportunity for student pilots in the United States to gain the same learning experience in advanced electric aircraft systems and management as student pilots in Australia and Europe that are using Pipistrel Alpha Electros for flight training. The Velis Electro is similar to the Alpha Electro, except the Velis has a 50 kg higher MTOW and the cockpit includes an embedded data logger and a tactile and aural AOA based stall warning. The petitioner states that this directly supports the vision for the FAA to reach the next level of safety, efficiency, environmental responsibility, and global leadership. They state that electric propulsion in aircraft is here, and the aircraft specified in this petition will help students in the United States learn how to transition from internal combustion propulsion to electric propulsion as this third revolution in aviation progresses. The petitioner states that by learning first-hand about efficient power management, battery management, how to maximize the strengths of electric motors vs. piston engines, and flight planning with limited energy storage, students will learn valuable skills to help them transition into more advanced future electric aircraft designs, such as electric vertical takeoff and landing aircraft (eVTOLs) and larger fixed-wing electric conventional takeoff and landing aircraft (eCTOLs) as these aircraft come to market.

Advance Data Collection from Training Flights in Support of the FAA's Promulgation of Regulations Pertaining to Aircraft with Electric Powerplants.

The petitioner states that additional information can be gathered from Certified Flight Instructors (CFIs) and students training in the aircraft, which would be shared with the FAA to support data-based promulgation of regulations addressing electric aircraft. The petitioner states that the approval of the requested exemptions would allow the generation of this necessary decision-making data much more quickly and help to foster a community consensus-based rulemaking approach. According to the petitioner, the Aircraft in this petition will operate in compliance with § 91.151 and all other sections of part 91 related to day VFR operations. In addition, they state that the aircraft in this petition has been and will be maintained and inspected in accordance with 14 CFR § 43.1(d), and appropriate sections of §§ 43.3, 43.5, 43.7, 43.9, 43.13, and 43.15, which will provide additional data.

The petitioner states that at EAA Air Venture 2022, the FAA's MOSAIC (Modernization of Special Airworthiness Certificates) project was discussed with FAA Aircraft Certification Service (AIR) leadership, and at that time, it was noted, that MOSAIC language would take additional time to develop. The petitioner suggests that the data that would be generated and shared with the FAA after the grant of this petition for exemption would align closely with the MOSAIC project goals and future rulemaking. The FAA has announced pending part 21 changes to address the unique aspects of electric propulsion in manned aircraft, and the data generated

after a grant of this petition for exemption could provide information regarding the design, maintenance, and operational in-service experience of electric propulsion to inform future industry standards and rulemaking.

The petitioner states there are a variety of aspects of electric aircraft which potentially make them simpler and safer to operate than aircraft with combustion engines, topics which will become even clearer during flight training operations and operator feedback. They state that for example, calculation and awareness of the changes in aircraft weight, balance, and center of gravity (CG) for the entire duration of a flight is of vital importance in aircraft with combustion engines. The petitioner states that consumption of fuel during a trip changes these factors, which are essential to the safety of flight. According to the petitioner, in an electric aircraft such as the Velis Electro, there is no change in weight, balance, or CG due to fuel burn and these figures remain equal at takeoff and landing.

The petitioner states that the Pipistrel Velis Electro Aircraft has an equivalent level of safety at least equal to 14 CFR 21.190. The Velis Electro has demonstrated levels of safety equivalent or higher than conventionally powered airplanes. The Velis is able to do this with a type certified electric engine E-811-268MVLC (TC No. EASA. E.234), fault tolerant and crashworthy battery system. They state that maintenance on the aircraft will be conducted by holders of an FAA issued Airframe & Powerplant (A&P) certificate, with annuals conducted by a holder of an Inspection Authorization. The petitioner states that maintenance or repairs that are not covered by the contents of the maintenance manual shall only be conducted after prior communication with the manufacturer. The petitioner states that all instructors who provide flight instruction in Electros through New Vision Aviation will hold an FAA Certified Flight Instructor ("CFI") certificate. Pipistrel offers a no-cost on-line knowledge training course available to anyone for the Velis Electro.

The petitioner states that pipistrel has developed a "differences" training program and additional differences information can be gathered by routinely soliciting and collecting feedback from CFIs and student pilots who fly the Velis Electro. The petitioner states that observations from pilots that have flown the Velis Electro have been that the aircraft demands good rudder control to fly correctly, which has been viewed as a positive attribute from a training perspective. They also state that the airframe design for Electro is also very capable of handling crosswinds with a maximum crosswind component of 18 kts. According to the petitioner, while these observations do not represent differences between the electric and gas propulsion systems, they do represent a difference between common trainers such as the Cessna 172 and Piper Cherokee. They state that a few of these observed differences include:

- Simpler starting procedure requiring no fuel and oil system management.
- Reduced time for pre-take-off checks due to no ignition system, carburetor, or oil to warm-up.
- Smooth, precise, and instant throttle response on take-off and during flight operations.
- Low noise during flight and none while waiting for take-off.
- Comparative climb performance at 647 ft/min compared to Cessna 172 at 721 ft/min.

- Operational range is limited to 50 minutes with VFR reserve of endurance making the Velis Electro less suitable for cross-country flights.

Generation of Data to Assist with Informing FAA Promulgation of Regulations Impacting Aircraft with Electric Powerplants and their Operations

The petitioner states that the FAA has many potential approaches to consider regarding pilot training, pilot qualifications/certifications/endorsements, maintenance, certification, and more. They state that data that would be generated after a grant of this requested Petition for Exemptions would provide a unique opportunity for data to be collected by the petitioner and shared with the FAA to support and inform the FAA's regulatory promulgation efforts involving electric aircraft while also embracing the drive towards safe sustainable aviation.

Federal Register Notice

A summary of the petition was published in the Federal Register on August 2, 2023 (88 FR 50948). The FAA received no comments.

The FAA's Analysis

The FAA agrees that electric propulsion systems will likely present environmental, cost efficiency, and opportunities for emerging technology exposure—while maintaining safety and complying with existing aircraft standards. The FAA recognizes that significant advances in electric propulsion have been made and that its use has continued to gain popularity because of the likely environmental and economic benefits. In April 2016, the Pipistrel Velis Electro was evaluated and certificated by the European Union Aviation Safety Agency and issued a Light Sport Type Certificate (EASA.A.573 TCDS).

International standards also exist for electric propulsion aircraft, which the FAA finds acceptable. ASTM International has developed light-sport category electric-powered propulsion consensus standards, which the FAA accepted for electric propulsion unit design and manufacturer consensus standards.

However, aircraft with electric propulsion systems cannot receive a special airworthiness certificate as an LSA because by definition, LSA must have a single reciprocating engine, if powered.

When the 2002 LSA notice of proposed rulemaking was issued, the FAA considered electric propulsion as an acceptable alternative to reciprocating engines because it was believed to adhere to the proposal's intent to require a "simple-to-operate design." However, when the final rule was promulgated in 2004, the FAA changed the term "single non-turbine engine" to a "single reciprocating engine" to exclude rocket and turbine engines—a desire expressed by several commenters—but still permitted rotary and diesel engines to be used. The FAA believes at the time the rule was created, the philosophy for LSA was small, simple, and safe. Electric propulsion was likely too novel back then for adoption. Practical batteries likely seemed like something only feasible in the distant future. As technology has advanced over the years, the FAA accepted an F37 standard in 2015 for electric propulsion even though the rules do not allow electric propulsion in LSA.

The FAA believes that it would not be difficult to transition from an electric to a conventional powerplant (i.e., a reciprocating engine) because of the manner in which effective flight training has always allowed a pilot to transition from one aircraft to another (i.e., transitioning from single engine to multi-engine, reciprocating to turbine, etc.).

Public Interest

The petitioner proposes that the public would benefit from §§ 21.181(a)(3)(i) and 21.190(a) relief because (1) it would reduce flight training-created community air and noise pollution by using a zero-emission electric airplane; (2) reduce flight training costs because the aircraft does not consume traditional fuel, oil, etc.; and (3) generate data to help advance the electric aircraft motor industry and provide the FAA with useful electric-powered aircraft operation. The FAA agrees. First, the reduced environmental impact provides benefits to the community at large and those operating around the aircraft because of reduced exposure and emissions into the atmosphere. Second, reduced flight training costs would benefit students, assuming aircraft rental rates are reduced to account for no fuel, oil, etc. Flight training students would further benefit from exposure to different and emergent propulsion systems, which may see wider use in the aviation field over the coming decades. Third, electric propulsion data collected during flight training operations could be helpful to the FAA as we consider the wider use of electric propulsion aircraft.

Equivalent Level of Safety

The petitioner argues that the Velis Electro would not adversely affect safety because it: (1) is certificated in Europe, where it is already used as a flight trainer; (2) is an electric version of the Pipistrel Velis Trainer, which has a Rotax 912 powerplant and has already been issued an FAA S-LSA airworthiness certificate; (3) meets, at least, a level of safety that is equal to an aircraft certificated under § 21.190; and (4) the aircraft conforms with established EASA regulations and ASTM standard F2840-14.

The FAA agrees that the aircraft does not adversely affect safety, for several reasons. First, the aircraft was built to an FAA-accepted ASTM consensus standard and accepted by and certificated by EASA. The FAA finds that this electric-powered LSA meets an equivalent level of safety when the electric powerplant meets the FAA-accepted ASTM consensus standard F-2840-14 (for electric propulsion units) because of their design and testing requirements. Second, the FAA acknowledges that the Velis Electro conforms with all the other criteria to be certificated as an LSA under § 21.190, with the exception of its electric powerplant. Furthermore, this type of electric propulsion system adheres to the simple-to-operate design requirements intended for LSAs.

This exemption would permit certain persons to exercise the privileges of a sport pilot certificate or a student pilot seeking a sport pilot certificate in the Velis Electro aircraft. Specifically, the aircraft would be available to operate for already certificated pilots (e.g., flight instructors with a sport pilot rating) and for those students receiving flight training for a pilot rating.

The Velis Electro does not qualify as a light-sport aircraft because of the electric powerplant. However, the aircraft meets all other parameters of a light-sport aircraft as defined in 14 CFR 1.1. The FAA notes that it is possible for a student pilot to train entirely in an electric-powered aircraft, receive a rating, and then later fly a traditional reciprocating engine light-sport aircraft as

defined in 14 CFR 1.1. However, because of the limited range of this electric powered aircraft, the petitioner states that students may require training and fly aircraft with reciprocating engines in order to complete certain required tasks to achieve a certificate or rating, and further notes student pilot training will include traditional reciprocating engine powered LSA and electric powered airplanes addressing any concerns with the use of two different powerplants. The FAA notes that § 61.89 requires student pilots who intend to conduct solo operations must obtain make and model specific training and subsequent qualifying endorsement from an authorized instructor within the preceding 90 days. That training must include powerplant specific knowledge and operations training.

The petitioner states that its training program will include a flight training manual supplement for the aircraft, specifically pertaining to the differences between the reciprocating engine aircraft and electric aircraft; a POH and maintenance manual, appropriate placarding, and a series of specific operational flight training limitations to account for the differences between the traditional reciprocating engine and the electric motor. Review of the Textron eAviation Velis Electro Training Program finds it will sufficiently address the unique characteristics of an electric powerplant. Therefore, Condition and Limitation No. 3 requires alignment of the training program with the supplementary documents submitted with the petitioner's exemption request. Further, to ensure that a flight instructor is sufficiently familiar with any differences in training in the electric aircraft compared to a reciprocating engine aircraft, Condition and Limitation No. 3 requires a flight instructor to have at least 5 flight hours of pilot-in-command time in the Velis Electro aircraft in the specific make and model.

As previously discussed, this exemption will facilitate the Velis Electro in receiving a special airworthiness certificate in the light-sport category despite not meeting the definition of a light-sport aircraft as defined in 14 CFR § 1.1. However, certain student pilot and sport pilot regulations in § 61 specifically apply to "light-sport aircraft" as the defined term under 14 CFR 1.1; while this aircraft will be certificated under a light-sport aircraft provision by way of this exemption, the aircraft will not meet the definition of light-sport aircraft. Therefore, the FAA finds it necessary to address certain part 61 provisions to facilitate operations for student and sport pilots. For the purposes of this exemption grant the Pipistrel Velis Electro airplane holding a special airworthiness certificate under § 21.190 is considered a light sport aircraft and any regulations listed under the provisions of part 61, subparts J and L apply. This is set forth in Condition and Limitation No. 8.

Regarding the Petitioner's request for relief from 14 CFR §§ 43.3(c), 43.7(g) and 65.107 (b) and (c), the FAA finds an exemption is not necessary. Exemptions to §§ 43.3(c) and 43.7(g) are not necessary because Petitioners stated that inspections and maintenance will be performed by A&P mechanics certificated under part 65. An A&P mechanic is permitted to perform such maintenance and inspections (when duly authorized). Additionally, exemptions to § 65.107(b) and (c) are also not necessary because a part 65 subpart D certificated A&P repairman is already authorized to inspect and repair LSA within the privileges and limitations of §§ 65.85(b) and 65.87(b).

Notice of Proposed Rulemaking (NPRM)

The FAA published an NPRM in the Federal Register on July 24, 2023, titled the Modernization of Special Airworthiness Certification (MOSAIC). The FAA proposed to permit the certification of electric-powered light sport category aircraft under § 21.190 using industry consensus

standards. Additionally, this rulemaking proposal would permit sport pilots to operate aircraft with electric powerplants under a new part 61 rule provision listing the design requirements for aircraft that a sport pilot can operate. While continuing to be an active rulemaking project that has not yet been finalized, the NPRM provides additional support to this rationale (i.e., sport pilots to operate electric powered airplanes).

Summary

In reviewing the Textron eAviation November 22, 2022, petition and submittal of additional information provided by Textron eAviation on June 26, 2023, the FAA notes that the Velis Electro aircraft is equipped with an electric powerplant but otherwise conforms with all the other § 21.190 criteria for certification as a light sport airplane. Current training and certification requirements for sport pilots and flight instructors with a sport pilot rating can facilitate the safe operation of the Velis Electro aircraft as long as it meets the electric powerplant ASTM consensus standards. The ASTM consensus standards are accepted by the FAA and require electric powerplants to be designed and tested consistent with the safe operation of light sport aircraft. However, the FAA does expect that student pilots, sport pilots and flight instructors with a sport pilot rating who wish to operate airplanes with an electric powerplant review and understand the operational procedures and limitations specified by the manufacturer and otherwise adhere to any conditions, operating limitations, or part 91 operational rules associated with their operation. The FAA finds an equivalent level of safety is achievable by this aircraft when operating an LSA with an electric powered engine, as opposed to an aircraft with a reciprocating engine, if that electric powerplant meets the FAA accepted ASTM consensus standard F2840-14 for electric propulsion units.

The FAA's Decision

In consideration of the foregoing, I find that a grant of exemption is in the public interest and would not adversely affect safety and would provide an equivalent level of safety to those aircraft that meet the exempted regulations.

Therefore, pursuant to the authority contained in 49 U.S.C. §§ 106(f), 40113 and 44701 delegated to me by the Administrator, the petitioner is granted exemptions from §§ 21.190(a) and 21.181(a)(3)(i) to operate the Pipistrel Velis Electro that may be certificated and maintained under a § 21.190 special airworthiness certificate in the light-sport category, equipped with a single electric propulsion system. Petitioners are also granted exemptions from 14 CFR §§ 61.89(c), 61.303(a), and 61.315(a) on behalf of persons exercising the privileges of a sport pilot certificate or persons exercising the privileges of a student pilot certificate to permit flight time obtained in the Pipistrel Velis Electro aircraft to be considered pilot flight time obtained in an LSA. The petitioner is further granted exemption from 14 CFR §§ 61.411(a), 61.415, and 61.429(b) to allow persons exercising flight instructor certificate privileges with a sport pilot rating to provide flight training in the Velis Electro aircraft.

The petitioner suggested seven operating limitations pursuant to this exemption. The FAA reviewed and considered these proposed operation limitations. The FAA did not accept the proposed operating limitations as suggested. Instead, the FAA has developed Operating Limitations which are aligned with similar grants of exemption.

These grants are subject to the conditions and limitations listed below.

Conditions and Limitations

1. The Velis Electro aircraft used to conduct flight operations under the provisions of this exemption must possess an FAA-issued special airworthiness certificate facilitated under § 21.190.

2. The pilot in command (PIC) must carry a copy of this grant of exemption (either electronically or paper) on board the airplane.

3. Authorized flight instructors who intend to provide training in the Velis Electro aircraft and the subsequent make and model must have a minimum of 5 hours of pilot-in-command in Velis Electro aircraft. Any training must align with Textron's Velis Electro Training Program for the Velis Electro.

4. Textron eAviation must maintain an independent flight record of all flight operations conducted under the provisions of this exemption when operating the Velis Electro airplane. The flight record must include the date, the time and length of flight, the aircraft N number of the airplane flown, and the person acting as PIC. Should the jurisdictional flight standards office request a copy of that record, it must be provided within five business days of that record request.

5. Any Velis Electro airplane operating under the provisions of this exemption that terminates with a loss of power must report that flight incident to Textron eAviation and to the jurisdictional flight standards district office (FSDO) within 24 hours of that event.

6. The FAA reserves the right to withdraw this grant of exemption at any time if the Administrator determines that the Velis Electro airplane has been operated contrary to safety or contrary to any of the provisions or limitations associated with the operation of these airplanes or the grant of exemption.

7. The petitioner must provide the FAA with continued operational safety, maintenance, and operational data upon request.

8. The Velis Electro airplanes referenced in this exemption are considered light-sport aircraft under subparts J and K of part 61 and persons must comply with the regulations under those subparts applicable to persons seeking to operate light-sport aircraft.

9. This exemption applies to the Pipistrel Velis Electro Aircraft serial numbers 00150-00500.

10. This exemption is only valid for operations in the United States.

Issued in Washington, DC, on March 1, 2024.

BRIAN E CABLE

Digitally signed by BRIAN E CABLE
Date: 2024.03.01 13:06:04 -05'00'

Brian Cable,
Manager, Organization and System Policy Branch
Policy and Standards Division
Aircraft Certification Service