



MagniX

magniX is an electric motor manufacturer for electric aircraft, wholly owned by Singapore investor Clermont Group.^[1] The company is headquartered in Everett, Washington, United States.

History

The company was founded in 2009 in Australia to research various technologies for electric motors. In 2017, it developed a motor that became their prototype and led to pivoting the company to focus on Electric Aviation and move its headquarters to Redmond, Washington. The magni5, its original prototype electric motor, was developed in 2017.

In June 2018, magniX publicly stated plans to fly an electric Cessna 208 Caravan with a 540 kW (720 hp) motor for up to an hour, by August 2019.^[2] By then, the company's magni5 electric motor could produce 265–300 kW (355–402 hp) peak at 2,500 rpm at 95% efficiency with a 53 kg (117 lb) dry mass motor, having a 5 kW/kg (2.3 kW/lb) power density. The magni5 competes with the 260 kW (350 hp), 50 kg (110 lb) Siemens SP260D for the Extra 330LE.^[2]

By September 2018, a 260 kW (350 hp) electric motor with a propeller had been tested on a Cessna iron bird. The 560 kW (750 hp) Caravan was expected to fly by the fall of 2019 and by 2022 magniX estimates electric aircraft could fly up to 800 and 1,610 km (500 and 1,000 mi) by 2024.^[3] The motor ran on a test dynamometer for 1,000 hours. The iron bird is a Caravan forward fuselage used as a test bed, with the usual PT6 turboprop engine replaced by an electric motor, inverter and a liquid-cooling system, including radiators, driving a Cessna 206 propeller. The production motor will produce 280 kW (380 hp) at 1,900 rpm, down from the test motor's 2,500 rpm, allowing the installation of the propeller without a reduction gearbox.^[4]

By April 2019, the magni250 280 kW (375 hp) was offered for the Eviation Alice as a second power option after Siemens 260 kW motors, as magniX had accumulated over 1,500 hours of ground tests in Redmond and Australia.^[1]

Beaver conversion

By then, magniX partnered with Harbour Air to electrify its entire fleet: the first converted aircraft was to be a DHC-2 Beaver serving as the test prototype for the magniX motor, energy storage, and control systems.^[5] On 10 December 2019, the eBeaver flew for the first time.^[6] Low energy density but proven lithium-ion batteries filled the cabin and took the prototype to its maximum gross weight to provide enough energy for a 15 min flight with a 25 min reserve.^[7]

magniX

	
Company type	Subsidiary
Industry	<u>Aerospace manufacturer</u>
Founded	2009 in <u>Queensland</u>
Headquarters	<u>Everett, Washington, U.S.</u>
Products	<u>Electric motors</u>
Owner	<u>Clermont Group</u>
Website	<u>www.magnix.aero</u> (<u>https://www.magnix.aero/</u>)

The magniX magni500 electric motor used in the Harbour Air electric de Havilland Canada Beaver weighs 135 kg (297 lb) and develops 560 kW (750 shp)^[8] In contrast, the Pratt & Whitney R-985 Wasp Junior SB it is replacing has a dry weight of 290 kg (640 lb), not including oil, and produces 400 bhp (300 kW), more than halving the weight, while nearly doubling the power – a saving in this case that can be transferred toward carrying the difference in additional batteries.

Caravan conversion

The first flight of the modified Cessna 208B Grand Caravan was completed at Grant County International Airport on 28 May 2020.^[9] The eCaravan is powered by a 560 kW (750 hp) motor and a 1 t (2,200 lb), 750V lithium-ion battery. Its 30 min first flight consumed \$6 worth of electricity, needing 30-40 min of charging. The magni500-powered variant can fly 160 km (100 mi) with 4-5 passengers while keeping reserve power, and aims for a certification by the end of 2021, hoping to operate 160-kilometre (100 mi) flights with a full load of nine passengers with better batteries.^[10]

In December 2020, CEO Roei Ganzarski told an interviewer^[11] that the company was consolidating its operations at Everett, Washington, and had shut their Australian site on the Gold Coast earlier in the year. In January 2021 the company formally announced that they will be moving their headquarters from Redmond to Everett, with plans to relocate all of their Australia operations there as well.^[12]

Products

- magni350EPU*: 350–280 kW (470–380 hp) Take-Off/continuous, 111.5 kg (246 lb), needs 2× magniDrive100^[13]
- magni650EPU*: 640–560 kW (860–750 hp) Take-Off/continuous, 200 kg (440 lb), needs 4× magniDrive100^[13]
- magniDrive100*: 170 kW (230 hp) power electronics used to run the magni350 and magni650, 12 kg (26 lb).^[13]

Customers and partners

Company	EPU	Airplane(s)	Notes
<u>Harbour Air</u> ^[14]	magni650	<u>de Havilland Canada DHC-2 Beaver</u>	on going test flights (C-FJOS & C-FIFQ)
<u>Tier 1 Engineering</u> ^[15]	magni350	<u>Robinson R44</u>	To be operated by <u>Lung Biotechnology PBC</u>
<u>Eviation Aircraft</u> ^[16]	magni650	<u>Eviation Alice</u>	First flight: <u>September 27, 2022</u>
<u>Universal Hydrogen</u> ^[17]	magni650	<u>Dash 8</u>	First flight: March 2, 2023
NASA	magni650	Dash 7	EPFD (Electrified Powertrain Flight Demonstration)
<u>Blade Urban</u> ^[18]	TBA	<u>Cessna 208 Caravan</u>	
<u>Flapper</u> ^[19]	magni650	<u>Cessna 208 Caravan</u>	
<u>Desaer & CEiiA</u> ^[20]	magni350	<u>Desaer ATL-100H</u>	

See also

- Siemens SP260D

Related lists

- List of aircraft engines

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External links

- [Official website \(https://www.magnix.aero/\)](https://www.magnix.aero/)
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