

## Heart Aerospace equips ES-19 with EGNOS

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Credits: Heart Aerospace

### Who is Heart Aerospace?

[Heart Aerospace](#) is a Swedish electric airplane company born in 2018 and based in Gothenburg, Sweden, responsible for developing the ES-19. The company is a spin-off from the Elise research program funded by the Swedish Government through the Swedish Innovation Agency [Vinnovav](#). Heart participated in the Y Combinator start-up accelerator in 2019 and closed its seed round in 2019 with lead investments from [QVT Ventures](#) and [Norrskan Foundation](#). In 2021, United Airlines and Mesa Airlines made a purchase order for 200 ES-19 aircraft with an option for an additional 100 aircraft. The airlines also made large investments in the company, and in conjunction with the order, Heart Aerospace announced the closing of its Series A round, led by [Breakthrough Energy Ventures](#).

Heart Aerospace is one of the founding members of the Nordic Network for Electric Aviation, together with airlines, airport operators, and other stakeholders across the Nordic countries. In 2020, Heart was awarded a €2.5M grant from the European Investment Council as part of the European Green Deal.

The vision of the company is to change regional aviation whilst helping the environment by decarbonizing short-haul air travel.

Heart Aerospace's mission is to create the fastest, most affordable, and sustainable transportation for regional travel to every corner of the world.

### ES-19

Heart Aerospace's first aircraft is the ES-19, a 19-passenger regional airplane driven entirely by batteries and four propped electric motors. The first-generation aircraft will have a maximum range of up to 400 km (250 miles) using today's lithium-ion batteries. The maximum capacity is expected to increase as battery energy densities improve.

The core of the ES-19 is the electric propulsion system, consisting of a 400kW electric motor, an electric motor controller, and a battery pack. The ES-19 will have zero operational emissions. It will also be quieter, with less vibration and noise than

the turboprop aircraft. The aircraft is set to be certified for commercial operation by the end of 2026.

### ES-19 and LPV

In December 2021, Heart Aerospace announced its partnership with Garmin to incorporate the industry-leading G3000 integrated flight deck into the ES-19 airliner.

The recently acquired G3000 is fully capable of performing LPV approaches. Designed as a STOL (Short Take-Off and Landing) aircraft, the ES-19 will operate from runways as short as 750 m. LPV will help future operators to reach smaller airfields with precision and safety.

When asked about EGNOS and LPV, Etienne Lemarchand, Head of Avionics Systems, and Sophie Laperche, Avionics Systems Engineer, both mentioned the importance of LPV in the decision making for the choosing of the flight deck panel and avionics. "Among other needs, LPV was a mandatory design requirement for us. We wanted ES-19 to be able to perform LPV approaches."

Also, with the new PBN IR regulations, they considered it compulsory for any new aircraft type in Europe to be equipped with EGNOS and LPV capability, as the new regulation establishes GNSS as the standard means to enable approach operations to CAT I minima, excluding the use of conventional navigation procedures, except in case of PBN contingencies or when other performance-based navigation methods are no longer available.

Finally, when asked about the future needs of ES-19 future operators, Etienne said, "Of course, not only were we convinced of equipping EGNOS, but operators and stakeholders have shown a huge interest in the ES-19 being able to perform LPV."

The future of aviation, including fully electrically powered aircraft, seems to be aware of the importance of EGNOS' use in the near future, and manufacturers such as Heart Aerospace are designing new aircraft with EGNOS and LPV capabilities as standard. Heart Aerospace, along with EGNOS, is paving the future for greener and more sustainable aviation.