

EGNOS navigation system begins serving Europe's aircraft

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One of Eurocontrol's EGNOS pioneers, this Aurigny Airlines Trislander can perform EGNOS-guided approaches using runway procedures published for Southampton Airport in the UK and Alderney Airport in the Channel Islands. This activity took place through the partnership of the UK's National Air Traffic Services (NATS), Aurigny Airlines and Anglo Normandy Engineering, with the support of the UK Civil Aviation Authority and the States of Guernsey. Credit: Eurocontrol

Today, the EGNOS Safety-of-Life signal was formally declared available to aviation. For the first time, space-based navigation signals have become officially usable for the critical task of vertically guiding aircraft during landing approaches.

By using three satellites and a 40-strong network of ground stations, the European Geostationary Navigation Overlay System (EGNOS) sharpens

the accuracy of GPS satnav signals across [Europe](#).

The signals are guaranteed to the extremely high reliability set out by the International Civil Aviation Organisation standard, adapted for Europe by Eurocontrol, the European Organisation for the Safety of Air Navigation.

The EGNOS Open Service was launched in October 2009, for navigation applications where the safety of human life is not at stake, such as [personal navigation](#), goods tracking and precision farming.

Today, following an arduous certification and verification process, the EGNOS Safety-of-Life Service has been declared operational, and suitable for use by European aviation.

“We are very proud of the large effort ESA put into EGNOS, and very pleased that it can now be used for the purpose it was initially designed for,” said Philippe Michel, head of ESA’s EGNOS project team.



The US GPS global satellite navigation system has an accuracy of 5-10 m. Across our continent that accuracy is greatly sharpened to 1-2 m through the European Geostationary Navigation Overlay Service (EGNOS), an operational

precursor to Europe's coming Galileo global satnav system. EGNOS broadcasts augmented information through a trio of geostationary satellites linked to a network of monitoring ground stations. Credit: ESA

“Through EGNOS, satellite navigation guidance is being made available for the first time in the vertical as well as horizontal domain,” explained Francisco Salabert of Eurocontrol.

“EGNOS offers the aviation industry the means to provide accurate and safe vertically guided approaches to smaller airports where a conventional precision landing system is not today economically viable.

“Its introduction will reduce delays, diversions and cancellations of flights into and out of these airfields while improving passenger safety.”

In order to use EGNOS for approaches, Air [Navigation](#) Service Providers must publish runway procedures and aircraft and operators have to be equipped with certified receivers and be approved for operations.

“Eurocontrol is coordinating EGNOS's operational introduction across Europe,” Mr Salabert added. “Runway procedures have already been designed for various airports and heliports, with more on the way.

“On the airline side, we are encouraging early adaptors – called EGNOS pioneers.”

After six years in operation, the ‘WAAS’ US equivalent to EGNOS, is being used by more than 40 000 aircraft and more than 2000 procedures have been published.

Some 15 years in the making, EGNOS is the result of a tripartite agreement between ESA, the European Commission (EC) and Eurocontrol.

As initial EGNOS programme manager, ESA designed, qualified and procured the system from a consortium led by Thales Alenia Space France. Overall programme management passed to the EC in 2009. The system's day-to-day running is overseen by the Toulouse-based European [Satellite](#) Service Provider (ESSP).

Meeting the aviation industry's demanding safety requirements, set by Eurocontrol, posed the real challenge for EGNOS's Safety-of-Life service.

ESA produced much of the technical documentation needed for formal safety certification, while Eurocontrol performed independent monitoring of EGNOS performance.

The final system comes with an extremely high degree of integrity built in. The EGNOS signal is guaranteed to maintain a minimum level of accuracy, with just a one in 10 million chance of error.

If this reliability falls below this level then EGNOS users are alerted within six seconds.

ESA is now acting as the design and procurement agent on behalf of the EC for all major EGNOS system changes throughout its operational lifetime, as well as preparing for the next-generation EGNOS, expected around 2020.

Provided by European Space Agency

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