EGNOS

#EUSpace

Safety of Life (SoL) Service

What is the EGNOS SoL Service?

The EGNOS[1] SoL Service offers reliable and more precise GNSS[2] signals.

Launch:

EGNOS SoL was launched in 2011.

Sectors:

The SoL Service currently supports the Aviation and Maritime sectors.

Purpose:

To provide higher accuracy, integrity and continuity of GNSS signals when human lives are at stake.

What does it do?

EGNOS SoL is mainly designed for civil aviation. Specifically, it enables such applications as Localiser Performance with Vertical guidance (LPV) operations, which allow equipped aircraft to perform precision approaches down to 200 feet.

To achieve this, the service uses a combination of:

Integrity data to ensure GNSS accuracy and reliability

The SoL Service is based on integrity data provided through the EGNOS satellite signals. It is provided openly and is freely accessible without any direct charge.

Augmentation signals for improved positioning and timing

The SoL Service consists of an augmentation signal to the GPS Standard Positioning Service (SPS) for positioning, as well as an additional timing signal intended for a wide range of applications in different domains.

Standards set by the International Civil Aviation Organisation (ICAO) for Satellite-Based Augmentation Systems (SBAS)

To provide the SoL Service, the EGNOS system has been designed so that the EGNOS Signal-In-Space (SIS) complies with the ICAO Standards and Recommended Practices for SBAS.

Instant alerts in case of GNSS signal degradation

The SoL Service has the ability to provide timely and valid warnings to the users (alerts) when the system must not be used for the intended operation (or phase of flight).

[1]EGNOS - European Geostationary Navigation Overlay Service

[2] GNSS - Global Navigation Satellite System

Where is it used?

EGNOS SoL enhances aviation safety by enabling aircraft to make precision approaches with vertical guidance. In doing so, it helps reduce delays, diversions, and cancellations while also lowering operational costs.

Improved landing at **smaller airports** by enabling LPV approach procedures where ground-based navigation aids might not be available or feasible.

In **larger airports** it adds increased capability, flexibility, and serves as a reliable backup if ground-based systems fail, being a more cost-effective navigation option than legacy ground-based navigation aids.

Decreases environmental impact, thanks to lower fuel.

Reduces noise levels around the airport area.

EGNOS SoL is also used in:

Maritime - a specific Safety of Life Service Assisted for Maritime Users (ESMAS).

EUSPA's role

EUSPA operates, improves, promotes, and ensures the robustness of EGNOS SoL:

- **Manages** and **promotes** the use of EGNOS SoL in various sectors.
- Ensures the service meets stringent **safety, security and performance standards**.
- Maintains and improves the EGNOS system as **Design and Production Organisation.**

Facts and figures

1. **EGNOS SoL makes aviation safer**. By enabling LPV operations, it allows aircraft to perform precision approaches down to 200 feet (or 60 meters), for pilots to evaluate if the visibility is good enough to continue the landing process.
2. There are currently over **1,000** LPV runway approaches across Europe, an increase of more than 40% in the last four years (2021-2025 period).
3. With LPV approaches, aircraft can land at airports where traditional ground-based equipment might not be available, such as **small airports** and those in **rural areas**.
4. LPV approaches help pilots access airports even in poor weather conditions, which results in **fewer delays and cancellations**.
5. These optimised flight routes have an environmental benefit too, as they can **reduce CO_2 emissions**.

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