



EGNOS BULLETIN

Issue 32, Spring'20 Edition



Credits: ASL France



European
Global Navigation
Satellite Systems
Agency



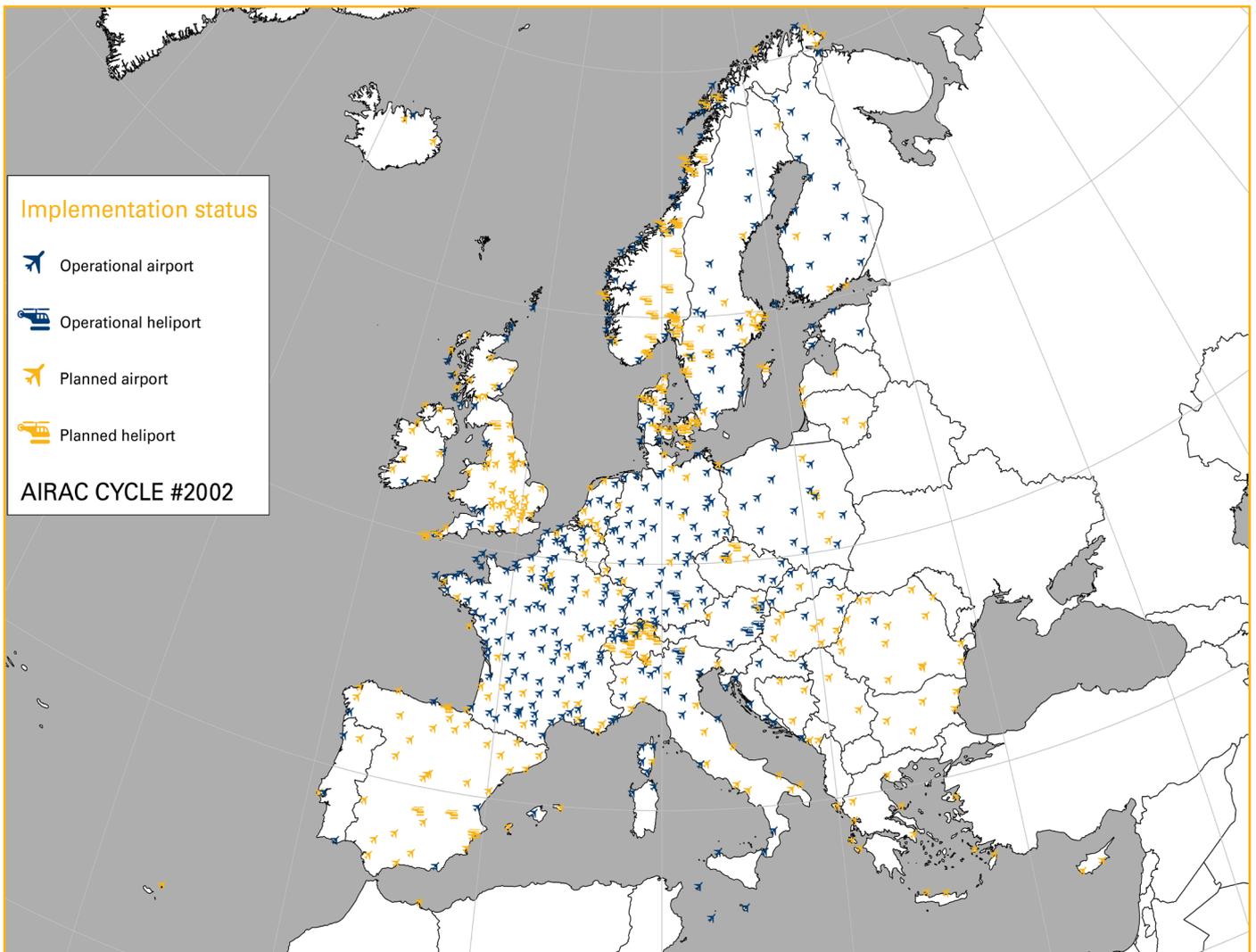
NAVIGATION
MADE IN
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<https://egnos-user-support.essp-sas.eu/>



<https://www.essp-sas.eu/>

EGNOS implementation



EGNOS
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Got questions? >>



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World's First: B737NG successfully completes an LPV approach

Major achievements in Europe and across the pond, as the popular B737NG joins an ever growing list of aircraft that support SBAS navigation and LPV approach capability, all whilst meeting ADS-B Out mandates.



Credits: CMC Electronics

As airlines look to prolong the lifespan of their aging fleet, one Canadian company, CMC Electronics, offers a solution that keeps aircraft flying by meeting current worldwide ADS-B Out mandates and also takes advantage of the ever growing EGNOS infrastructure.

A historic moment

On a chilly day in October 2019 a B737NG successfully flew its first LPV approach into Kenai Municipal Airport (PAEN) in Alaska. The aircraft was equipped with CMC Electronics' CMA-5024 GLSSU which is fully compatible with EGNOS and supports SBAS navigation throughout all phases of flight.

The Federal Aviation Administration had just approved an STC certifying the installation of the CMA-5024 for the B737NG aircraft family (-600/-700/-800) for DO-260B ADS-B out compliance and SBAS/GPS navigation with LPV approach capability.

It remains the first and only solution available today that is approved to introduce LPV approaches on a B737NG aircraft

This achievement was a collaborative effort between the FAA and CMC Electronics to make LPV a reality on one of the most popular air frames of all time, the B737NG.

European Approvals

Two EASA approvals are currently in progress. The first, approved by the FAA and TCCA and presented above, features the CMA-5024 as an SBAS positioning source for navigation and to meet worldwide ADS-B Out requirements in addition to supporting LPV approach capability. It is already approved by the FAA and TCCA.

The second is a standalone ADS-B Out and LPV approach STC.

EASA approvals for both solutions are well under way and expected within the current year.

Initial EGNOS Customers

There are currently two European customers that will be utilizing these B737NG solutions.

The initial customer is an Italian airline offering scheduled and charter flights from Italy to various international destinations. Their installation will be for SBAS navigation and ADS-B Out only but provisioned for future growth to LPV. They appreciate the low cost solution that would allow their fleet to meet ADS-B Out mandates in the short term, while still providing the flexibility to take advantage of LPV approaches in the medium to long term.

The next customer is ASL Airlines France; based in Paris-CDG they offer a full range of aviation

services: scheduled, chartered and on-demand flights for passenger and freight activity. The airline operates a fleet comprising 18 Boeing 737 aircraft. They recently launched a project to equip this fleet with CMC's CMA-5024 for standalone LPV approach capability and ADS-B Out compliance with funding from the European GNSS Agency's (GSA) EGNOS Adoption for Aviation grant. By employing this LPV solution, ASL Airlines France will continue to strengthen and maintain its high quality of service to its customers.

Intuitive Cockpit

One of the greatest benefits of CMC's solution is the intuitive cockpit design that drastically reduces the cost of airline training.

This is achieved by the re-use of the existing Gables NAV control panel, which comes factory fit from Boeing, for LPV approach selection. As this panel is already in use for ILS approaches, the design ensures all approach selection is centralized in the same cockpit location. The single difference from line fit is an annunciator indicating when an LPV approach is actively being flown.

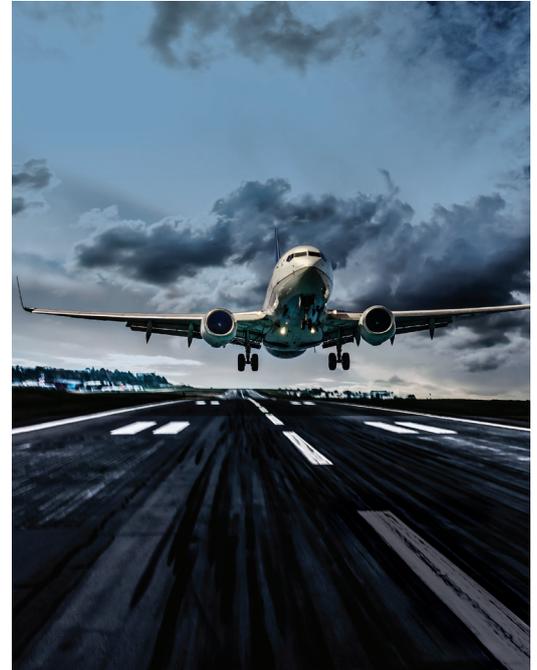
Additionally, CMC's ADS-B Out integration is designed to be indistinguishable from that of Boeing, in terms of cockpit and flight crew perspective.

The overall result is a simpler, more effective mental model for flight crews to absorb. In the words of one of the first pilots to fly an LPV on a B737: "From the pilot's perspective, CMC's

LPV system provides a clean, straightforward interface which behaves exactly like an ILS, but with the exceptional [SBAS] performance and availability."

Airliner Benefits

The use of the CMA-5024, is a cost-effective alternative to replacing the current B737NG multi-mode receiver (MMR). When paired with any DO-260B compliant transponder, it allows operators to meet worldwide ADS-B Out requirements, including EASAs. It also allows airlines to take advantage of the EGNOS-capabilities, specifically the increasing number of LPV approaches being developed all across Europe. These high precision GPS instrument approaches are equivalent to CAT I ILS approaches and do not require specialized crew training. Their aim is to reduce costs associated with flight delays and cancellations and provides airlines with a safe



Credits: CMC Electronics

“ Given the enhanced performance provided by EGNOS along with the undeniable safety, reliability and cost-saving benefits of LPV approaches, the need to increase the number of EGNOS and LPV-compatible aircraft should be a top priority ”

approach into airports where ILS is unavailable. As indicated by one of the first B737 LPV customers: "The addition of LPV capability to our aircraft permits us to provide significantly improved schedule reliability for our scheduled and charter clients, given the absence of traditional ground-based approach aids at many of the remote destinations we serve."

Lastly, this solution future-proofs airlines, by offering a simple upgrade path for their B737NGs to benefit from advanced GNSS functions such as GBAS GLS by upgrading to CMC's new CMA-6024 GPS/SBAS/GBAS receiver system.

Given the enhanced performance provided by EGNOS along with the undeniable safety, reliability and cost-saving benefits of LPV approaches, the need to increase the number of EGNOS and LPV-compatible aircraft should be a top priority for regulators, airlines and manufacturers alike. The approval of an STC that allows one of the world's most popular aircraft models ever sold, the B737NG, to successfully fly an LPV approach is truly exciting news.

This well-developed solution stands out on many levels. It is cost effective, allows airlines to meet current mandates, provides a future path to LPV approaches and overall SBAS compatibility and provides flight crews with an intuitive interface. The hope is that this will encourage more airline operators than ever before to upgrade their fleets to be EGNOS compatible.

Talking about EGNOS with... Trento Airport

Trentino Trasporti S.p.A is the company in charge of the public transport operations in Trentino (officially the Autonomous Province of Trento), a province located in the north of Italy with 540.000 inhabitants and high concentration of tourists especially in winter and summer times. The company manages and operates from Gianni Caproni (Trento) Airport, Tonale airfield and a network of 17 night and day helipads used by Helicopter Emergency Medical Services (HEMS). By early 2020, 2 departures and 4 approaches EGNOS-based Point in Space (PinS) procedures serving two different sites have entered into service, so we take the opportunity to interview, in this issue of the EGNOS Bulletin, Gianni Caproni Airport's director, Mr Marco Fozzer



Credits: Trentino Trasporti S.p.A

First of all, could you please let us know a bit more about your role(s) in Trentino Trasporti?

For more than 20 years I'm the accountable manager of Trento Airport and from 2010 manager of the 17 strategical HEMS helipads of the Trentino Region.

When did you first hear about EGNOS and PinS approaches?

I would say it was around year 2013 and thanks to ENAV, the major ANSP in Italy, who informed us about the benefits derived from PBN (Performance Based Navigation) implementation. PBN and EGNOS would improve the operation in our airport

(with respect to VOR/DME approaches) and all the heliports of the region.

And how was the process to achieve the publication of these procedures?

It was long and complex, that's for sure, as all stakeholders (Nucleo Elicotteri Provincia Autonoma di Trento, ENAV, ENAC, Leonardo Elicotteri) involved had to face something new, an air navigation concept that was not present before in Italian airspace specially in a class-G airspace. In total, the process took around 4 years including 6 mounts of test in VFR conditions, as requested by ENAC.



Credits: Trentino Trasporti S.p.A

If our information is correct, you received some funding from the European GNSS Agency (GSA) to complete the project. How did it help?

Yes, you are right. Back in 2015 we learnt about the possibility to benefit from funds provided by GSA which were meant to support the implementation of EGNOS in civil aviation. We decided to submit a project proposal and in the end we won! It was a major factor in our project. The funds supported both the publication of procedures and the FMS upgrade of two AW139 units, and helped us to speed up all activities; they gave us the capability to have an objective to be achieved at a specific deadline, facilitating our role of coordinating and pushing with the rest of stakeholders. Otherwise, the project might have taken longer than the 4 years it took.

On the other hand, it also allowed us to follow-up other projects facing similar difficulties. We could talk and learn from other projects running in parallel across Europe.

Which were the main difficulties or challenges you had to face?

As I said, we were the first in Italy and in Europe to publish PinS procedures in AIP. Our PinS are located in Class-G airspace, meaning it is uncontrolled and there are no Air Traffic Controllers separating aircraft in flight. Therefore, it was difficult not from a technical perspective but mostly from a safety perspective. We had to demonstrate to ENAC, our supervisor, that the Concept of Operations and associated Safety Case were clear and that appropriate mitigations to potential risks were in place.

Which HEMS operators are already making use of these new EGNOS based procedures? And how many helicopters? What has been, for the time being, the feedback received from them?

The approaches are, for the time being, for exclusive use of our own HEMS operator, with a fleet of x2 AW139 rotorcraft. Certainly, the approaches will be open to any other HEMS operator that in the future may operate in the

region. In addition, authorisations will be given soon to interested operators who conduct HEMS in other Italian locations and would like to use our approaches for training purposes.

Trentino Trasporti is a certified ANSP providing a FIS service. Please tell us, was there any specific training requirement for your FIS operators (FISO)?

Yes, our FISOs are trained and authorised for PBN approaches. Indeed, IFR flights are only authorised when AFIS service is active, as coordination with other traffic and service units is critical. We have x2 AFIS On-the-Job Training Instructors (OJTI) in house and they are the ones who gave the training to the rest.

What is the way forward now? What are the plans for the coming years?

We are already working to establish a network of PinS departures and approaches that will cover the entire Valley of the Adige. We manage 17 helipads distributed around it and we intend to connect almost all of them. We would like to speed up the publication of the remaining operations and hence we also participate in international working groups that give us hints and relevant lessons learnt from other organisations.

What would be your main recommendations for other regions/organisations that would like to conduct a project like yours, leading to the publication of PinS approaches serving HEMS operators?

There were so many items to address that I could

have many...But in the end, it really depends on what you want to do and where. So perhaps I would recommend keeping in mind that this is not a one-size-fits-all concept. What we did in our region and the solutions we came up with may not necessarily be directly applicable for others. In our case, the main difficulties were related to the mountainous environment and the lack of radar and radio coverage. You have to think about these limitations and choose the solutions that best adapt to them, and for that you need close and constant coordination with all actors. We also spent a lot of time finding a way to flight validate our PinS approaches due to the lack of an approved and properly equipped (including hardware and software) flight validation helicopter. We could only solve this issue with the help and contributions of Leonardo Elicotteri and ENAV.

Any final message you want to share with our readers?

Yes. On the one hand, in my opinion the flight validation phase that comes once all technical and safety issues related to the design and construction of flight procedures are solved, is critical, because it is necessary to identify a standard system to install on board for the flight validation.

On the other hand, I hope that in the near future more and more operators will work towards the wider use of PinS procedures, as they greatly facilitate low visibility operations and enhance the safety of the flight.

Did you know...?

... that EGNOS can reduce CO2 emissions during flight thanks to the possibility of selecting alternate airports served by LPV approaches that are closer to the destination? The lower CO2 emissions come from the reduction of the amount of fuel that has to be loaded at departure and, consequently, the fuel consumption associated to the extra weight is avoided.

EGNOS Success Stories

WIDEROE FLIGHT TESTS DONE IN DECEMBER



Credits: ESSP SAS

Wideroe and AVINOR performed last November some test flights at multiple airports with published EGNOS based approaches.

Wideroe is a Norwegian regional airline operating a fleet of forty-three DHC-8 that received funding from the European GNSS Agency (GSA) to introduce SBAS capability in nine of their aircraft. The flights took place from Tromsø (ENTC) to Mehamn (ENMH) and then to Kirkenes (ENKR), the latter two airports already counting with LPV procedures. José M. Lorenzo, Aviation Development Expert from ESSP, accompanied Wideroe-based pilot Ole Støre flying the DHC-8-

202 S (equipped with FMS UNS-1Fw) during the tests. The pilot was impressed by the performance delivered by EGNOS even at that high latitude, "exactly as GLS and ILS." Additionally, he experienced less workload and an improvement in stability of the EGNOS guidance over ILS.

In the context of Norwegian regional aviation, EGNOS has become a cost-effective alternative to GBAS and ILS at several destinations, ensuring accessibility in all weather conditions and reducing investment in ground infrastructure.

EUROPEAN FARMERS BENEFIT FROM EGNOS FOR VARIABLE RATE APPLICATIONS WITH TEEJET TECHNOLOGIES SYSTEMS.



Left: Tractor with an EGNOS-enabled guidance system from Teejet Technologies in action.

Right: Mario Bonzano's tractor's cabin with Teejet Technologies EGNOS-enabled equipment.

Teejet Technologies products have been part of farming applications since the first crop protection products came onto the market in the 1940's, dating back the earliest use of electronics in agriculture. This experience in the fields of spraying, fertilising, and seeding allows Teejet Technologies to provide quality products and suitable technical solutions for farmers, such as guidance and steering systems, field computers and devices for application control and monitoring. In this sense, EGNOS plays a significant role as the basic GNSS correction system for all European farmers who employ precision farming devices from Teejet Technologies.

José María Alonso de Robador Lorente, Precision Farming Customer Support Engineer at Teejet Technologies in Europe, confirms that "all guidance and rate controller systems we offer throughout Europe include EGNOS and start using it as soon as they are plugged into a GNSS antenna." José María also highlights as a main added-value that "EGNOS is a quite accurate free-of-charge solution that provides high performance to our customers." In terms of application, "EGNOS can ensure high-quality spraying and spreading jobs, avoiding gaps and overlaps when using ABSC (Automatic Boom Section Control)."

EGNOS can also be employed for other tractor-based jobs, recommended especially for those types of crops that do not require centimetre level accuracy, i.e. extensive crops in dry areas, such as dryland cereals, legumes and sunflowers. In general, "if the crop allows a pass-to-pass error of up to 20 cm, there is no reason to spend a huge amount of money on more precise correction services," José María explains. Additionally, Teejet Technologies promotes the use of EGNOS as an "inexpensive autosteering solution" among their customers, emphasising that "the availability of EGNOS corrections makes Teejet autosteering products more competitive in the market."

EGNOS performance and reliability are greatly

appreciated by Teejet Technologies, because "our customers always give positive feedback with regard to EGNOS corrections. It is common to receive calls asking for support on EGNOS, which means that the farmers are actually using it." In this sense, José María also remarks on the usefulness of the EGNOS User Support Website: "we consult it mainly to know the current availability and forecast of the EGNOS SIS (signal in space). When we get support requests related to EGNOS, we always check its current configuration online, to ensure that the device's set-up is the appropriate one."

Mario Bonzano is one of the many European farmers who benefit from EGNOS capabilities through Teejet Technologies products. Mario grows mainly rice, along with other rotation crops, in his fields at Agiliano Vercelesse in the north of Italy. Mario has been using EGNOS, integrated in his guidance system and rate application controller, in all instruments from Teejet Technologies, since 2017. Mario describes the process to configure EGNOS in his equipment as "simple and easy. Just install the system in the tractor, plug it in and select the option "EGNOS MODE – AUTOMATIC in the settings menu." This way, the GNSS receiver connects automatically to the EGNOS satellites. Mario takes advantage of the high availability of the EGNOS signal over Europe by satellite, stating that "I always run both my autosteering system and the ABSC of my sprayer in EGNOS mode." Among the multiple benefits that EGNOS offers to farmers, Mario highlights that he obtains "much better precision control of my spraying jobs. I never overlap because the autosteering system works very accurately. Also, every boom section switches on/off exactly where it should." For these reasons, Mario promotes GNSS in general and EGNOS in particular, recommending that all European farmers "install as many satellite controlled systems as possible. It improves work, reduces costs and makes your life easier."

EGNOS SUPPORTS EUSTREAM FOR GAS TRANSMISSION SYSTEM OPERATION IN SLOVAKIA



Eustream's field operator measuring the location of a gas pipeline with a GNSS receiver. Credits: Eustream

Eustream is the operator of the high-pressure transmission system in the Slovak Republic whose main mission is the transmission of natural gas to Slovakia and through its territory to the European markets. The transmission capacity in the system is used by major European energy companies. Eustream's transmission system represents an important energy connection between the Russian Federation and the European Union. It is connected to the primary transmission routes in Ukraine, Czech Republic, Austria and Hungary, and a new gas interconnection pipeline with Poland is being built.

Eustream operates gas transmission pipelines with an overall length of 2,273 km, which are regularly inspected. All pipeline routes are stored in a GIS (Geographic Information System), so the location of parts that need maintenance can be easily identified and transmitted to the corresponding field operators. In this way, the operators can benefit from GNSS handheld devices to directly locate specific pipes with the required precision. Branislav Retkovský is head of Eustream's GIS department since 2005, being responsible for

land surveying measurements with GNSS. Branislav states that "for our pipeline maintenance activities, sub-metric accuracy is required, so we take advantage of the Slovak national augmentation system, named SKPOS, which we access via GPRS (mobile Internet connection)." In this context, EGNOS plays an important role as complementary solution, thanks to the fact that its corrections are broadcasted by geostationary satellites and hence available all over Europe. "Our pipelines are routed through rural areas and there are sites with no GPRS coverage. EGNOS helps us there to achieve the required precision and fulfil our task even without Internet connection", Branislav explains.

Regarding specific EGNOS benefits for utility enterprises like Eustream, Branislav highlights that "for us, EGNOS means a reliable, open and free-of-charge back-up solution that brings confidence to our land survey practice." Besides its technical and operational advantages, Branislav also remarks the economic contribution of EGNOS, as "it has allowed Eustream to reduce the costs of their pipeline location tasks".

CYCLIN' PORTUGAL: EGNOS CONTRIBUTES TO SIGNPOSTING THE BEST BIKE TRAILS IN PORTUGAL



Credits: Cyclin'Portugal

Under the umbrella of the [Portuguese Cycling Federation \(FPC\)](#)¹ and in collaboration with other bodies such as [Turismo de Portugal](#), [Cyclin'Portugal's](#) programme was restructured in 2019 in response to the increasing number of leisure bikers and cyclotourists all around the country.

The main objective of this program is to establish a duly FPC-approved network of cycling routes and the Cyclin'Portugal Centres, all of it aimed at supporting the practice of this sport in nature even within protected areas.

During 2019 within the framework of the FPC's attributions and competences, the "[Regulation for the homologation of cycling routes and the Cyclin' Portugal Centres](#)" was updated in some areas, and includes specific chapters addressing how road cycling and Mountain Bike (MTB) routes shall be signposted.

Just like it was the case in Spain with the publication of [IMBA Spain's signposting manual](#)

by early 2019, the Portuguese Regulation now recommends signalling technicians to use EGNOS to collect position coordinates for each of the signs or panels deployed along the routes in order to record more accurate track logs.



Credits: Cyclin'Portugal

(1) FPC is also a member of [IMBA Europe](#).

EGNOS services highlights

EGNOS VISIBILITY CITY MAPS

EGNOS User Support

HOME » RESOURCES & TOOLS » EGNOS VISIBILITY CITY MAP

EGNOS visibility city map

The following map shows the visibility of EGNOS geostationary satellites in urban areas throughout different locations across Europe. Select the different operative and test PRNs and click in the map to check its visibility in the selected city.

Satellites

- PRN 126 (INMARSAT 4F2 EMEA) - Operational
- PRN 136 (ASTRA SES-5) - Operational
- PRN 123 (ASTRA 5B) - Test

We are pleased to announce the new EGNOS Visibility City Map available under the Resources & Tools section on the EGNOS User Support Website.

The brand new **EGNOS Visibility City Map** brings you the visibility of EGNOS geostationary satellites in urban areas (more than 1000 habitants) throughout Europe.

Until now, it was only possible to check the EGNOS geostationary satellites visibility in clear-sky conditions where no off-terrain objects could hinder the view of the sky in the **EGNOS Visibility Map**. Now, however EGNOS urban users will have a hint to which areas could be subject to obstruction “of the line of sight” to the target EGNOS GEO satellite due to buildings.

Navigate to your desired European location or use the internal search engine and click the map to check the visibility depending based on the selected EGNOS GEO satellite.

SERVICE NOTICE #22 “EGNOS SPACE SEGMENT UPDATES IN THE FIRST QUARTER OF 2020”



Service Notice #22 “EGNOS Space Segment Updates in the First Quarter of 2020” was published in December 2019, addressing the temporary changes that the EGNOS Space segment configuration would undergo from 9 January to 23 March 2020.

These changes consist of three GEO swaps as shown in the image: INMARSAT 4F2 (PRN 126) enters operational mode, while ASTRA SES-5 (GEO-1/PRN 136) and ASTRA 5-B (GEO-2/PRN 123) are in test mode in alternate periods. On completion of the third and final swap, the original configuration will be recovered, with both ASTRA satellites (GEO-1 and GEO-2) back in operational mode.

Service Notice #22 is updated after each GEO swap, providing the latest information on the timeframes, GEO satellites’ coverage and outcomes of each swap, together with the operational EGNOS space segment configuration in each phase.

EGNOS users are advised to follow the evolution of the EGNOS Space Segment through the EGNOS User Support Website and the notifications available for subscribed users.

Moreover, it is recommended that EGNOS Open Service users verify the active EGNOS GEO satellites in their user equipments and contact their receiver manufacturer for support in case of need.

Visit the [EGNOS User Support Website](#) for further information and new updates of the Service Notice!



What's new?

Since the last bulletin...

EGNOS WORKING AGREEMENTS SIGNED (EWA)

The following EWAs have been signed in the last quarter:



New Castle Airport **United Kingdom**



Glasgow Prestwick Airport **United Kingdom**



Trentino Trasporti **Italy**



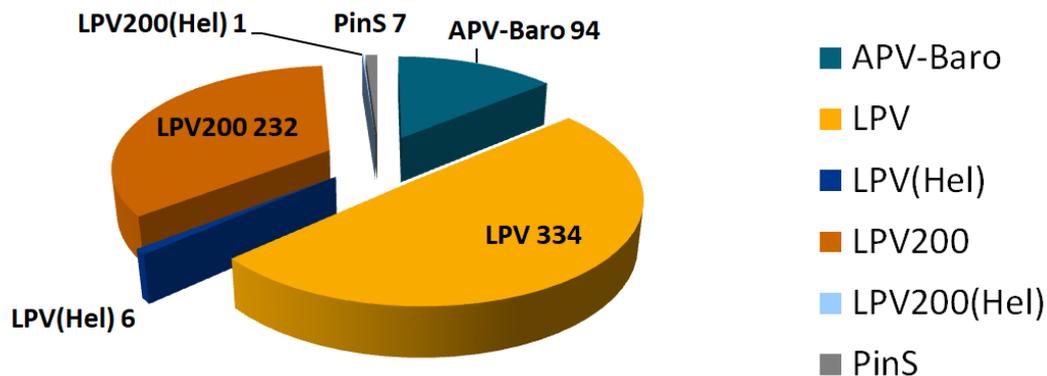
Pécs-Pogány **Hungary**



South Lapland Airport **Sweden**

LPV, LPV-200, PinS & APV Baro procedures published (including AIRAC cycle 2020 #02– 30/01/2020)

Next graph shows, the number of procedures LPV, LPV-200, PinS, APV-Baro, LPV-Hel and LPV200-Hel. The total number is **674**.

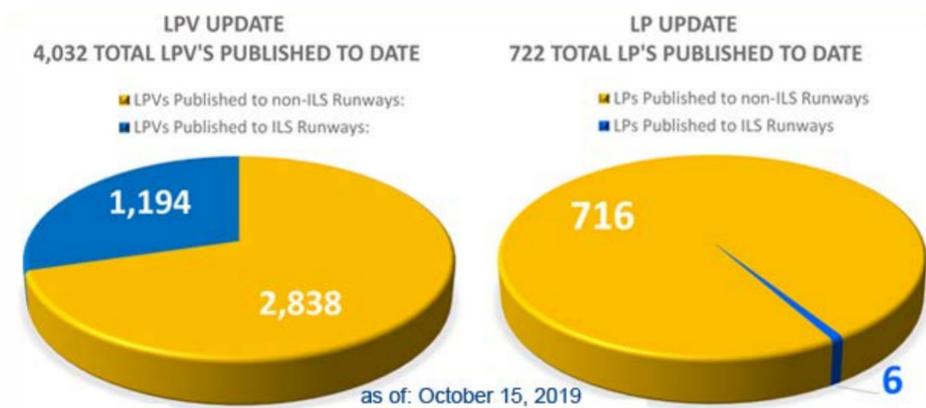


SBAS in the world

WAAS

Chart below shows the WAAS list of satellite based approach procedures. You can find further information on [SatNavNews](#).

Courtesy of the FAA WAAS Team.



Did you know...?

... that the [PBN Implementing Rule 2018/1048](#), establishing airspace usage requirements and operating procedures concerning performance-based navigation, mandated the publication of LPV minima at all instrument runway ends only served by non-precision approaches by December 2020? Additionally, this regulation mandates LPV approaches at those RWYs served by precision approaches from 2024.

Did you know...?

... that ICAO completed the rollout of the new satellite-based augmentation system (SBAS) channel assignment tool? This tool provides the necessary platform to request SBAS channel numbers for states wishing to develop SBAS procedures.

What's going on...



in aviation.

AIR OPS ORGANIZED BY EBAA



The European GNSS Agency (GSA) was present at the **Air Ops 2020**, organized on the 4-5 February in Brussels (Belgium). Carmen Aguilera, Head of Section for Operational Market Development from GSA, reported on the latest developments related to EGNOS-based applications and approach operations during the conference "Satellites keep

the light on! Keeping those regional airports open". This annual event was organised by **EBAA** (European Business Aviation Association) on the 4 and 5 of February in Brussels, and was an opportunity to remark EGNOS benefits at regional airports where LPV approaches are a cost-effective solution for business aviation traffic.

Did you know...?

... that a document describing **how to implement GNSS based instrument flight procedures for General Aviation** has been recently published? This presentation is included in the "[Guidance Material](#)" section of the [EGNOS User Support Website](#) and it provides a good understanding of RNP APCH operations, the regulatory framework surrounding their implementation and future developments that may ease the deployment process for General Aviation. Moreover, you will find some real examples on the appendixes. Take this opportunity to become more familiar with EGNOS!

in agriculture.



EGNSS4CAP APP EMPLOYS EGNOS TO SUPPORT FARMERS WITH THE COMMON AGRICULTURAL POLICY



EGNSS4Cap Workshop at the 25th MARS Conference. Credits: Cultiva Decisiones.

EGNSS4CAP mobile application was officially presented by the GSA at the **25th MARS Conference**, held on 26-28 November 2019 in Prague (Czech Republic). **EGNSS4CAP** is an Android app that digitises procedures for farmers in the European Union to satisfy their reporting requirements under the current and post-2020 Common Agricultural Policy (CAP) reform. EGNSS4CAP enables farmers to provide geo-tagged photos as reliable evidence to support and complement a Copernicus-based monitoring approach to the CAP. This way, EGNSS4CAP benefits both farmers, speeding up the verification and payment of their subsidies, and CAP paying agencies, reducing the number of required on-the-spot checks.

EGNSS4CAP enables farmers to get pictures of their crop fields with improved location and timing by means of any Android mass market device, such as smartphones and tablets. For this purpose, EGNSS4CAP relies on both EGNOS and Galileo (provided that the device where it is installed tracks and uses them for the PVT functionality) to ensure the required reporting accuracy towards the CAP paying agencies. The provision of these

geo-tagged photos by farmers helps to reduce the bureaucratic burden as well as to improve the performance and reliability of CAP inspections. In addition, EGNSS4CAP is not only available for free but also Open Source, so it can be integrated by any developer into third-party applications. The first version of the application as well as the open source code can be downloaded from the **EGNSS4CAP website**.



EGNSS4CAP Android application. Credits: GSA



in geomatics.

EGNOS BENEFITS FOR GEOMATICS PRESENTED AT GSA WEBINAR

WEBINAR ON:

EGNSS for Geomatics

Thursday, January 23 @ 14:00 CET

PRESENTED BY
 European Global Navigation Satellite Systems Agency

HOSTED BY
 GEOSPATIAL WORLD

The [European GNSS Agency \(GSA\)](#), together with [Geospatial World](#), organised a free webinar on 23 January 2020 titled “[EGNSS for Geomatics](#)”, where the audience learned about everything that the EU satellite navigation systems (EGNSS) have to offer for this user community. GNSS is one of the key technologies in this context along with Geographic Information Systems (GIS), Earth Observation and Remote Sensing, supporting geospatial data acquisition. Geomatics disciplines include the geo-data collection means and techniques used in land surveying (including cadastral, construction, mining or infrastructure monitoring), photogrammetry, remote sensing, marine surveying and other emerging applications, such as those based on drones or mobile mapping. For all these cases, GNSS data is either paramount, or a key enabler.

In this context, EGNOS and Galileo provide high-quality positioning, navigation and timing services to geomatics’ users all around the world. In this webinar, experts in GNSS and geomatics explained in detail all the benefits that geomatics applications can get from the European navigation programmes. The audience was guided through the EGNOS and Galileo programmes, their services and performance, the added value for the geomatics user community, and the applications already enabled as well as the innovation potential. EGNOS was shown to be of high interest for the management of natural areas, maintenance of utility networks, inventory and control of assets, sampling field campaigns and determining of perimeters and areas.

in maritime.

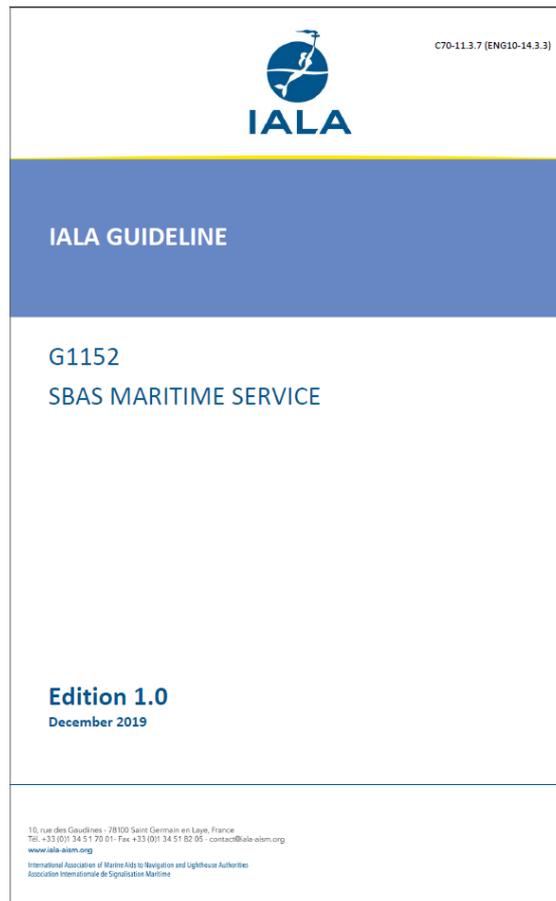


IALA GUIDELINE 1152 ON THE SBAS MARITIME SERVICE

On 13 December 2019, the [IALA Council 70](#) approved IALA Guideline 1152 on SBAS Maritime Service. This Guideline is intended to support those maritime administrations evaluating the possibility to rationalize their DGPS services, as SBAS can be considered a backup solution for DGNSS or as a complementary means to provide augmentation to mariners.

Maritime administrations can take advantage of the use of SBAS, which provides enhanced performance over the capabilities of GNSS constellations. SBAS improves the accuracy and reliability of GNSS by correcting signal measurement errors and by providing information about the accuracy, integrity and availability of GNSS signals.

IALA Guideline 1152 identifies aspects that maritime or coastal administrations should take into account when considering the use of SBAS by vessels navigating in their waters. The guideline provides the description of all the SBAS elements relevant to the maritime administrations, considering the use of the SBAS Signal in Space onboard vessels. This includes the reference requirements, user equipment, and the description of the service and the operational scheme. The document is available for download on the [IALA website](#).





in maritime.

WORKSHOP ON THE FUTURE OF MARINE RADIOBEACON DGPS



The International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) in association with the Northern Lighthouse Board organised a Workshop on the Future of Marine Radiobeacon DGPS/DGNSS, which was held in Edinburgh during the last week of January.

The IALA DGNSS beacon system was developed in the 90s, being deployed since then in many countries around the world. The system was adopted as the international maritime de facto standard for providing GNSS differential corrections. Currently, some countries are wondering what to do with their radiobeacon DGNSS service, either carrying on with the delivery of the service or discontinuing it.

That was the rationale behind the organisation of this workshop, whose aim was to discuss and to develop guidance on the future of radiobeacon DGNSS, through knowledge sharing, defining the future requirements for PNT services and discussing the future of DGNSS. Rather than identifying a one-fits-all solution, the objective was to gather all the information concerning the different options, to enable each competent authority to choose the best approach for them. Satellite-based augmentation systems were

presented as a cost-efficient solution to complement DGNSS infrastructure. As described in IALA Guideline 1129, SBAS can be used by maritime authorities as a source of differential corrections to be re-transmitted by IALA beacons and/or AIS/VDES infrastructure. Besides, the SBAS signal-in-space can be used directly by the vessel, however, maritime authorities need to take into account several considerations as described in IALA Guideline 1152. It was also highlighted that the European Commission, the European GNSS Agency, the European Space Agency and the EGNOS Service Provider are working together on a specific Maritime Service based on EGNOS. As a result of this workshop, the drafting of IALA Guidelines on the future of marine DGNSS radiobeacons started, with the objective of setting out the necessary background information that each authority may need to consider moving forward.

Nearly 50 attendees from 22 different countries took part in this workshop, contributing to the interesting discussions. Now, you have the chance to deepen in this topic, getting a closer look onto the different views presented through [the report](#) published in the IALA website.

in GNSS.



EGNOS PRESENT AT THE EU SPACE WEEK



As one of the three European Space Programmes, EGNOS had a prominent role at the European Space Week event that took place in December 2019 in Helsinki, Finland.

As a key conference in the space sector, the Paasitorni congress centre gathered business, policy-makers, international experts and the space user community at a week-long event that addressed a wide variety of applications using space-based technology within the European Union.

GSA presented the EGNOS market strategy and achievements and outlined the EGNOS Services' status and roadmap, among other topics. Additionally, ESSP presented the [performance and status of the EGNOS system during 2019](#), showing that the EGNOS Signal in Space was permanently available and the observed Safety

of Life performance practically covered the full SDD commitment in a consistent manner. Consequently, every airport with a published EGNOS-based APV-I or LPV200 approach could benefit from an EGNOS service availability greater than 99%. The other highlights stressed during ESSP presentation were the major LPV200 service level coverage extension to the North that was delivered in October 2018, as well as the increase in the LPV200 and APV-I commitment areas to reach 72° North.

To wrap up, several users from different market segments gave their points of view regarding their specific use of EGNOS on the E-GNSS User Assembly explaining their needs and expected enhancements, which provided EGNOS representatives with valuable inputs to define future improvements to the system and services.

Did you know...?

... that a new White Paper on European Global Navigation Satellite Systems (EGNSS) highlights remarks the role that EGNSS plays in current drone operations and how it will evolve for future UTM developments. You can find it [here](#).

Upcoming Events

**16 - 18
March**

Munich Satellite Navigation Summit

The Munich Satellite Navigation Summit is a conference with a global impact dealing with satellite navigation's present and future. This one-of-a-kind convention of high-ranking worldwide speakers from industry, research and space programmes provides the participants with a broad overview and different perspectives on the latest developments in the field of GNSS.



**1 - 4
April**

AERO Friedrichshafen

The leading trade show for general aviation, AERO, celebrates its 28th anniversary this year. The trade fair in Friedrichshafen is the leading European trade fair for general aviation. In addition to the main decision makers and opinion leaders in the industry, thousands of aviation enthusiasts, are meeting there. As a trendsetter and driving force in the industry, AERO offers a complete view on general aviation.



**7 - 9
April**

Geospatial World Forum, Amsterdam

Geospatial World Forum is an annual gathering of geospatial professionals and leaders representing the entire eco-system of public policies: national mapping agencies, private sector enterprises, multilateral and development organizations, scientific and academic institutions, and large end users from government, businesses and citizen services.



EBACE, GENEVA

26 - 28
May

The European Business Aviation Convention & Exhibition (EBACE) is a premier event and the annual meeting place for the European business aviation community. The exhibition brings together business leaders, government officials, manufacturers, flight department personnel, avionics firms, fractional providers, charter/lease companies involved in nearly every aspect of business aviation operations.



MEETT in Space, Toulouse

19 - 20
June

Driven by the success of the 2018 Toulouse Space Show, the MEETT in SPACE event will take place on Friday the 19th and Saturday the 20th June 2020. This event will provide an excellent opportunity to understand the latest trends in the space sector. It will be held during the official opening of Toulouse's new Exhibition & Convention Centre.



Did you know...?

...that EGNOS stand at [WATM](#) will be part of a SESAR Tour on 11 March, devoted to "Environment: Free route, approach and arrivals"?

If you are at WATM, do not miss this opportunity and register to join Walking Tour 11 in this [link](#)



<https://egnos-user-support.essp-sas.eu>

EGNOS applications. Developers platform. Business support.
Information on historical and real-time EGNOS performance. EGNOS Signal in Space (SIS) status. Forecast on SIS availability and EGNOS performance. EDAS information and registration. EGNOS adoption material and tools.

For questions & information

EGNOS HELPDESK

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Disclaimer: EGNOS is a complex technical system and the users have certain obligations to exercise due care in using the EGNOS services. Before any use of the EGNOS services, all users should review the EGNOS SoL Service Definition Document ("SDD") and/or EGNOS Open Service SDD (both available on the ESSP SAS website <http://www.essp-sas.eu/>) in order to understand if and how they can use these EGNOS services, as well as to familiarise themselves with their respective performance level and other aspects the services may offer. Use of an EGNOS service implies acceptance of its corresponding SDD specific terms and conditions of use, including liability. In case of doubt the users and other parties should contact the ESSP SAS helpdesk at egnos-helpdesk@essp-sas.eu. Aviation Users may also contact their National Supervisory Authority. Data and information (the "Data") provided in this document are for information purpose only. ESSP SAS disclaims all warranties of any kind (whether express or implied) to any party and/or for any use of the Data including, but not limited to, their accuracy, integrity, reliability and fitness for a particular purpose or user requirements. Text and pictures that are part of the Data may be protected by property rights. Any use shall require the prior written agreement of ESSP SAS.



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