EGNOS

EGNOS, it's there. Use it.

EGNOS BULLETIN

Issue 28, Q4 2018

Credits: Fly-news.es

European
Global Navigation
Satellite Systems
Agency

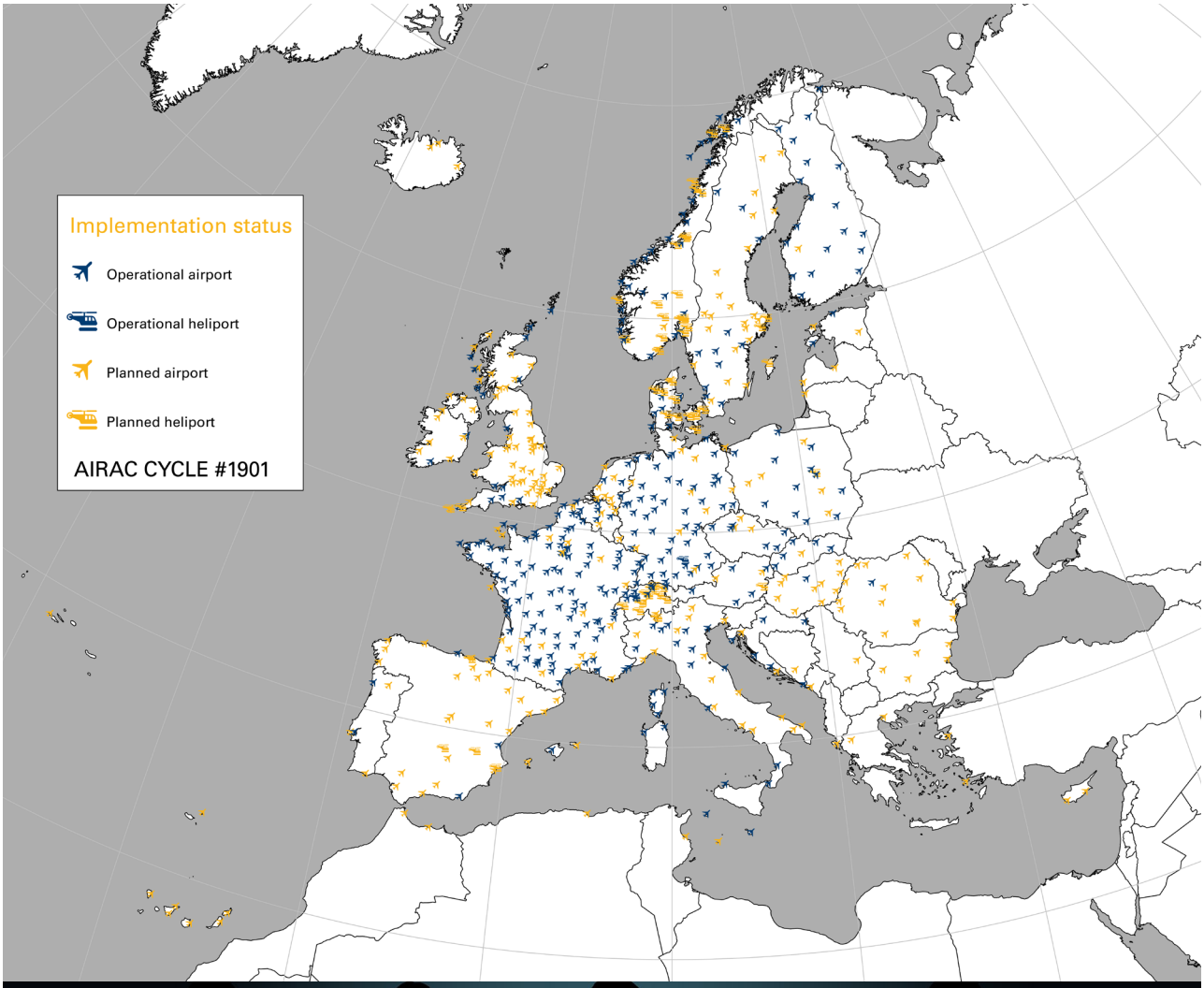
Precise navigation,
powered by Europe

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

ESSP

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

EGNOS implementation



A review of the EGNOS Safety Of Life Session in the EU Space Week

The EU Space Week 2018 took place in Marseille between the 3rd and 6th of December. The event, composed of a series of workshops, conferences and sessions around the EU space programmes Copernicus, EGNOS and Galileo, was organised by the European GNSS Agency (GSA). It was in the afternoon of Wednesday 5th that the session devoted to the EGNOS Safety Of Life service and applications took place, with nearly 100 attendees from all around Europe. See link to download agenda and presentation

The conference began with a warm welcome and introductory speech made by session chairs Mr Vincent Brison and Ms Carmen Aguilera from GSA, aiming all attendees at benefitting from the very interesting presentations and discussions that were about to come. The first set of presentations was provided by ESSP (in its role of EGNOS Service Provider), GSA (as EGNOS Programme Manager) and EASA.

Mr Javier De Blas, Service Development and GNSS Projects manager at ESSP made a quick review of how EGNOS benefits European civil aviation and presented its implementation status, which by the end of the year is of 487 operational LPV approaches, with an additional 105 LNAV/VNAV where EGNOS is authorised as source of vertical navigation, serving a total of 314 different airports. Ms Aguilera then introduced how EGNOS, and E-GNSS services in general, are evolving so as to be used in other aviation applications other than navigation, including Surveillance or distress tracking. She finished her presentation by

summing up the vast amount of work conducted together with ESSP during 2018.

Then Mr Bryan Jolly from EASA provided attendees with an overview of the so-called PBN Implementing Rule that was published by EC back in July. The regulation mandates the implementation of ATS routes and instrument approach procedures (IAPs) in accordance with a harmonised and agreed set of PBN specifications and functionalities.

In the case of Instrument Approach Procedures, the requirement is for airports and air navigation service providers (ANSPs) to implement RNP APCH to LNAV, LNAV/VNAV and LPV minima at all instrument runway ends, or RNP AR as required by obstacles. The deadline is set for 3rd Dec 2020, and extended to 25th Jan 2024 in case of instrument runway ends already served by other Precision Approach means like ILS. In the end, Mr Jolly made special emphasis on the fact that, by 6th June 2030, the normal procedures offered by ANSPs to airspace users will have to be PBN, with the exception of CAT II and III landing systems. The session continued with another two sets of presentations by the industry, for which summaries ares included in next pages of this EGNOS Bulletin issue.

The first set, more focussed on the airborne part, included speeches by Mr Laurent Puzenat from Air France, Mr Pascal Lohest from Portuguese BizAv operator Netjets and Mr Jean-Pierre Rivet from Collins Aerospace.

After the always wished coffee and networking break, it was the time to listen to Mr Marco Fozzer and Mr Luca San Giuseppe from Italian Aeroporto Gianni Caproni, to Mr Andre Biestmann from German ANSP DFS and to Mr Benoit Roturier from French ANSP DSNA.

EGNOS Programme & Services

EGNOS was present on the first half of the Plenary session that took place on the 5th December.

GSA, presented both the EGNOS programme status and the market strategy together with the achievements reached in the adoption of this service in different segments.

Thierry Racaud (ESSP CEO) presented an overview of the different EGNOS services, and explained the different interfaces stablished with users, namely:

- Those stablished within the activities to promote and foster EGNOS adoption.
- Those stablished to info about EGNOS services publications and service notices.
- Generic interfaces, e.g. EGNOS helpdesk, EGNOS User Support and EGNOS APP (iOS and Android)
- Specific interfaces with Safety of Life users (EGNOS Working agreements).

EGNOS performance achievements were presented by Javier Gómez (ESSP Mission Performance Manager).

Facts and figures were provided for:

- The signal in space availability.
- APV-1 and LPV-200 availability (Safety Of Life service).
- Accuracy (Open Service).
- EDAS service.

EGNOS Accuracy (Open Service) and EDAS performances have been beyond expectations and commitment during the period April 2017 – April 2018.

Performances observed every month are very good with the exception of September 2017 in which a slight degradation is observed in the North of the coverage area, due to a significant solar activity faced between the 6th and 8th of September.

EGNOS in aviation

SBAS OPPORTUNITIES AND CHALLENGES, BY AIR FRANCE

Laurent Puzenat, Flight Operations – CNS Project Manager at Air France, introduced the opportunities that the French operator has recognized in incorporating EGNOS technology to their fleet and to the ones from their partners Transavia and HOP!.

He remarked that safety is first priority for Air France and that LPV approaches were preferred to LNAV/VNAV as they are not linked to QFE setting, eliminating risks of CFIT and unstable approaches. They do not require navaid installation or maintenance being that one of the reasons why they have been so supportive to ASECNA initiatives for deploying SBAS in Africa.

Similarly, Air France sees a great potential on SBAS both to increase airport capacity and to improve customer satisfaction by avoiding operational disruptions such as delays, diversions or cancellations where EGNOS could reduce in 65,000 the number of affected passengers per year.

On the challenges side, Laurent highlighted the length of any aircraft modification process and associated pilot training as well as the cost of the avionics upgrade itself.

In any case, apart from having selected the LPV option on their new A350 deliveries, Air France is looking forward to having a similar solution offered for their A320 fleet, fitted with a Thales Flight Management System which is currently not LPV ready, their B777 legacy and B787.

The complete presentation is available here.

BENEFITS OF LPV APPROACHES FORTHE BUSINESS AVIATION, BY NETJETS

Pascal Lhoest, Regulatory Affairs Executive at Netjets Europe, emphasized the benefits brought by LPV to their operations especially in what regards to airport accessibility, one of the biggest concerns of the business jet operator.

Since their launch in 1996, NetJets has grown to operate over 100 aircraft in Europe into more than 900 airports.

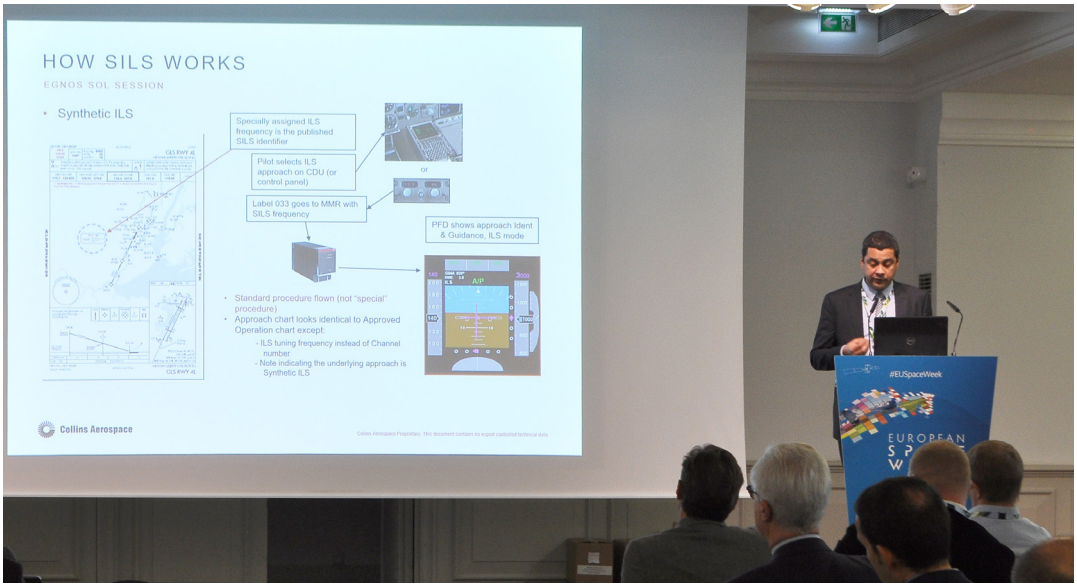
Pascal recognised that by 2035 EU airports won't be able to accommodate some 2 million flights due to capacity shortages. Accessing to primary and some secondary airports will become more difficult due to the increasing demand which, together with the fact that the majority of the remaining airports lack from precision approach, will challenge business aviation. For all that, Netjets sees a great potential on EGNOS, in combination with Enhanced Vision Systems, to secure airport access in all weather conditions.

Over the past years, Netjets has retro and forward-

fitted 38 aircraft and trained the crew to perform LPV operations with their Challenger 350, Global 6000, Phenom 300 and Citation Latitude.

The complete presentation is available here.

EGNOS AND SBAS: AN AVIONICS PERSPECTIVE, BY COLLINS AEROSPACE



Mr JP Rivet, Director, Marketing Avionics EMEA provided attendees with an overview of the past, present and immediate areas of work by the company in the field of GNSS, and civil aviation avionics in particular.

Besides emphasizing how SBAS benefits the aviation world and how it has exceeded initial expectations, Mr Rivet showed the company's portfolio of SBAS and LPV solutions in the business and commercial aviation sectors.

With the already known plans from Airbus and Boeing (both are working in the development of LPV within their two major programs in terms of deliveries, the A320 and B737 families respectively), he indicated how Collins Aerospace is currently working to provide its next generation Multi Mode Receiver (MMR) GLU-2100 for the two OEMs.

The challenges of introducing LPV in commercial platforms as retrofit options were also reviewed, and the concept of Synthetic ILS (SILS) patented and currently under development by Boeing was introduced.

SILS tries to isolate the retrofit issues by only introducing changes in the MMR, leaving the rest of the aircraft systems operate as if an ILS was executed.

More details on the SILS concept are contained in the presentation.

The final minutes were dedicated to also look at one of the opportunities ahead, which is the combination of LPV approaches with Enhanced Flight Vision Systems (EFVS), allowing to credit for lower visibility values and descend below DH 200ft above the threshold, even to touchdown, thanks to the use of these vision systems.

Did you know...?

… that, since 11th October 2018 there is an EGNOS flight simulator at Cite de l'Espace in Toulouse? With it, you can fly a LPV approach in a very easy and educative manner since it is especially adapted for kids and the general public

EGNOS in aviation

PBN (EGNOS) PROCEDURES FOR HEMS OPERATIONS: A NETWORK FOR HELIPADS IN THE TRENTO PROVINCE, BY CAPRONI AIRPORT

The last round of presentations started with Mr Marco Fozzer and Mr Lucan San Giuseppe from Trentino Trasporti S.p.A.in the stage. The company manages both Trento Airport (LIDT) and x17 strategical HEMS helipads located in the Italian Alps.

The presentation covered how the company managed, through the GSA's 2014 Call for EGNOS Adoption in Civil Aviation, to design and operationally implement a number of PBN EGNOS-based procedures connecting Trento Airport and the main helipads of the Trento Province.

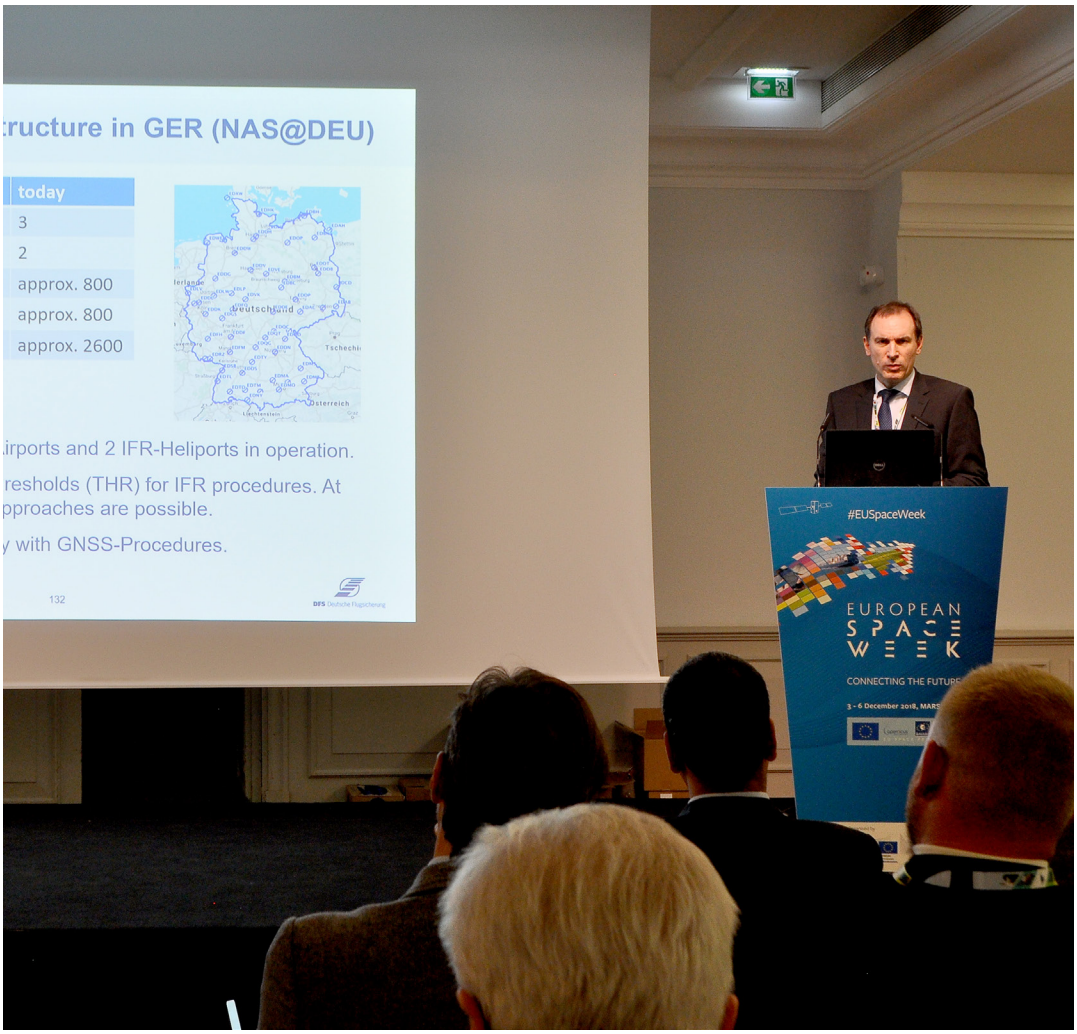
The network, once operational, will be used by HEMS operator PAT Nucleo elicotteri, and will increase the effectiveness and safety levels of their operations.

Through a close collaboration with Italian partners ENAV (design of procedures, flight validation and safety assessment), ENAC (competent authority), Leonardo (helicopter upgrade and pilots training) and Spanish consultancy Pildo Labs (support during flight validation), the project is about to achieve its objective by publishing all procedures with effective date 31/01/2019. The publication includes 4 Point-in-Space approaches down to LPV minima and 2 Point-in-Space RNP 1 departures into/from Trento Airport and Cles Helipad.

Mr Fozzer and Mr San Giuseppe provided a detailed description of the airspace environment and explained all the challenges faced by the project and how all of them were overcome. In fact, some of the main issues arose during steps such as the flight validations or the preparation of the safety assessment.

Luckily, at the end of the process the conditions and operational aspects allowing to safely fly the new procedures were agreed with ENAC. The final words were dedicated to review the very valuable Lessons Learnt. The complete presentation is available here

EGNOS SAFETY OF LIFE (SOL): ENABLING A MORE EFFICIENT NAVIGATION INFRASTRUCTURE AND AIRSPACE IN GERMANY BY DFS



Andre Biestmann, Director for Airspace and ANS Support at DFS since 2013, briefed the audience on the implementation plans for LPVs across Germany that go beyond the PBN IR mandate.

Germany, which has a complex and crowded airspace with over 800 ATS routes and 2,600 terminal procedures, has been one of the pioneering countries in making use of GNSS. Today, out of their 58 civil IFR airports, 7 are operating with just GNSS procedures.

Only 9 thresholds (7%) lack a vertically guided approach and these will be prioritized for LPV before 2020.

Andre depicted DFS plans to comply with PBN IR by publishing APV-I LPVs at 22 NPA and 53 PA runways from now until 2020 and 2024 respectively.

On top of that, by 2030, once SBAS CAT I approaches become available at 71 targeted precision runway thresholds, DFS will initiate the decommissioning of ILS, starting by Dresden, Dusseldorf, Erfurt, Hamburg, Hannover, Koln, Munster, Nuremberg and Saarbrucken. Similarly, the German ANSP is currently evaluating the decommissioning of 8 VORs and 35 NDBs.

The complete presentation is available here.

EGNOS in aviation

EVOLVING AND IMPROVING AVIATION LANDING NETWORKS WITH EGNOS BY DSNA

Benoit Roturier, from DSNA, presented the evolution and improvement of landing networks through the use of EGNOS. The satellite based technology allows the ANSPs together with the airports to propose a complete redesign of the landing networks through an intensive use of the PBN concept. The optimization of these landing networks is possible through the reduction of infrastructure costs (e.g. ILS rationalization) when implementing EGNOS based approaches, while safety levels and accessibility to the airport are even improved. To this extent ANSPs must build a common understanding together with airports and airspace users, in order to take all need on board. In order to implement changes, different GNSS technologies can be combined with EGNOS, always depending on the particular scenario. Support from the GSA is considered a key as well. This landing networks evolution is totally aligned with SESAR recommendation to start building Minimal Operating Networks (MON). The complete presentation is available here.

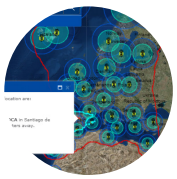
EGNOS services highlights

EGNOS USER SUPPORT WEBSITE

Check out some of the most stunning new features added to the EGNOS User Support Website during 2018:

EASE tool

The Egnos sAvingS in agriculturE (EASE) tool helps farmers on the introduction of EGNOS for machinery guidance in their daily labour. Take advantage of the savings when using EGNOS for your agriculture labour.

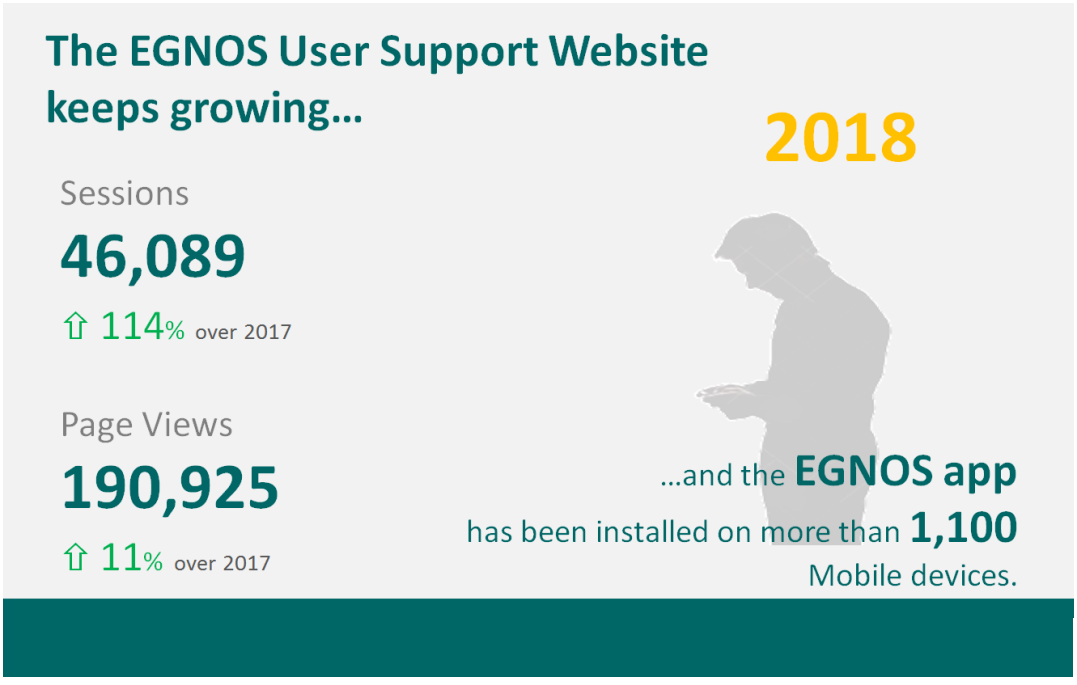


EDAS GNSS coverage map

Do not miss the opportunity to check the new EDAS GNSS coverage map showing the available positioning EDAS solutions at different locations.

RNP 0.3 Routes

Take a glance at the renewed LPV Procedures map including the RNP 0.3 routes and their waypoints information.



What's new?

Since last bulletin...

EGNOS WORKING AGREEMENTS SIGNED (EWA)

The following EWAs have been signed in the last quarter:

- Isavia **Iceland**
- SMATSA **Serbia**
- SMATSA **Montenegro**

LPV & APV Baro procedures published per country(including AIRAC cycle 2019 #01 – 03/01/2019)

Next table shows, for each country:

- the number of airports with LPV procedures, as well as the total number of LPV procedures;
- the number of airports with APV Baro procedures authorised to be flown with EGNOS vertical guidance as well as the total number of APV Baro procedures.

Country	Airports – SBAS APV procedures	# SBAS APV Procedures	Airports – SBAS CAT-I procedures	# SBAS CAT-I procedures	SBAS RNP0.3 routes	Airports – APV baro Procedures	# APV baro Procedures
Austria	0	0	5	8	0	0	0
Belgium	5	12	1	2	0	0	0
Croatia	5	9	1	1	0	0	0
Czech Republic	5	9	0	0	0	1	4
Denmark	4	8	1	2	0	0	0
Estonia	1	2	1	2	0	0	0
Finland	1	2	0	0	0	17	33
France	68	103	48	71	0	3	4
Germany	23	37	10	16	0	20	53
Guernsey	1	2	0	0	0	0	0
Hungary	0	0	1	4	0	0	0
Ireland	2	4	0	0	0	0	0
Italy	12	27	5	5	0	0	0
Malta	1	2	1	2	0	0	0
Netherlands	3	4	0	0	0	0	0
Norway	18	27	9	19	0	5	10
Poland	0	0	12	26	0	0	0
Portugal	2	3	0	0	0	0	0
Romania	1	2	0	0	0	0	0
Slovak Republic	2	4	3	4	0	0	0
Spain	4	9	0	0	0	0	0
Sweden	10	18	0	0	0	1	2
Switzerland	8	9	3	5	5	0	0
United Kingdom	15	32	0	0	0	0	0
Total	**191**	**325**	**101**	**167**	**5**	**47**	**106**

SBAS in the world

WAAS

The table below shows the WAAS list of satellite-based approach procedures. You can find further information on SatNav news.

Courtesy of the FAA WAAS Team.

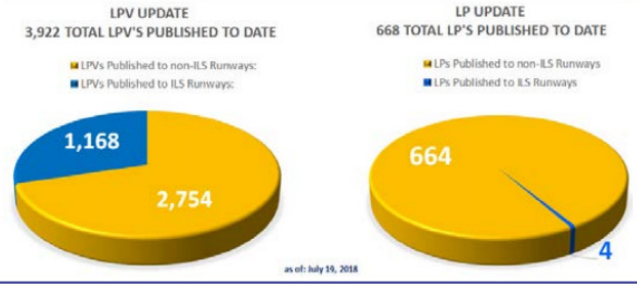
WAAS LPVs

The table to the right reflects the continuing growth of satellite-based approach procedures. For more detailed information about satellite-based instrument approach procedures, please visit our GPS/WAAS Approach Procedures web page. *http://www.faa.gov/about/office_org/ headquarters_offices/ato/service_units/techops/navservices/gnss/approaches/index.cfm*

Satellite-based Approach Procedures

RNAV (GPS) Approaches	ILS Runways	Non-ILS Runways	Total
LPV Line of Minima	1,168	2,754	**3,922**
<250' Decision Altitude			*1,073*
Exactly 200' Decision Altitude			*1,023*
LP Line of Minima	4	664	**668**
LNAV Line of Minima	1,219	4,820	**6,039**
LNAV/VNAV Line of Minima	1,147	2,662	**3,809**
GPS Stand-Alone Procedures	1	52	**53**
GLS Approach	11		**11**

(Data as of July 19, 2018)



Did you know...?

… that Jetfly has become the first European operator to take delivery of a Pilatus PC-24, a Swiss business jet providing better accessibility to airports and equipped by default to fly LPV approaches. This will be followed by three more units ordered by 2019. Jetfly, which is an active EGNOS user based in Luxembourg, already counts on another 19 SBAS-enabled aircraft.

What's going on...

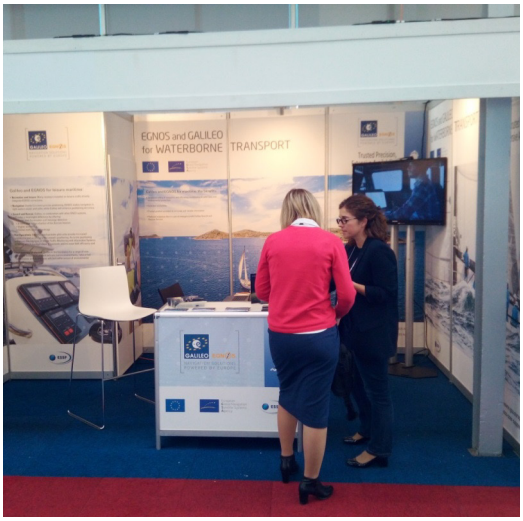
in maritime.

EGNOS IN THE MARINE EQUIPMENT TRADE SHOW 2018

METS Trade Show is one of the biggest worldwide marine equipment trade shows for the leisure industry in the world. It took place from the 13th to the 15th of November at RAI Amsterdam and EGNOS was present one more year.

Thanks to the great number of exhibitors and visitors, it is the perfect place to be updated with new products and to promote EGNOS to any kind of maritime stakeholders and users.

This year EGNOS/SBAS in general has been a hot topic amongst shipborne receiver manufacturers providing navigation products because of the potential role it might play to complement, back-up or replace some IALA MF-radiobeacons in the -future (US has published the decommissioning of such infrastructure in their coast by 2021).



in agriculture.

MONITORING AGRICULTURAL RESOURCES (MARS) CONFERECE

MARS Conference is the annual forum where Member State agencies in charge of the Common Agricultural Policy management meet to share the outcomes and benefits of the new technologies used and to listen to the leading directions posed by EU bodies, DG AGRI and JRC

This year it was highlighted the change of paradigm in CAP monitoring, as thanks to Copernicus it will be possible to move to a "performance-based" policy.

GNSS will still play a role in this process: EGNOS will be still used as the OSTC (on the spot checks) are needed -until the transition phase to a fully monitoring system finishes by 2020+-, while Galileo will start to gain more role in the geo-tagged photos as pilot projects demonstrate its feasibility.

Upcoming Events

WORLD ATM CONGRESS

12 - 14 Mar.

A new edition of the World ATM Congress, the most important Air Navigation Services Providers (ANSPs) congress in the world, will be held again in Madrid between 12th and 14th March 2019. Operated by CANSO BV in association with the Air Traffic Control Association (ATCA), the event provides an excellent opportunity for worldwide ANSPs and the ATM Industry to meet. Visitors will have the chance to walk the exhibition and enjoy a large number of free conferences.

EGNOS will be present at Stand 1141.

World ATM Congress 2019
A CANSO Partnership with ATCA
12-14 March 2019
Madrid, Spain
IFEMA, Feria de Madrid

EGNOS

EGNOS, it's there. Use it.

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

+34 911 236 555

egnos-helpdesk@essp-sas.eu

European
Global Navigation
Satellite Systems
Agency

ESSP

Precise navigation,
powered by Europe