LPV

Localizer Performance With Vertical Guidance

A revolution in today's technologically-driven world, Localizer Performance with Vertical Guidance (LPV) empowers flight crew to fly using an approach that mirrors ILS CAT 1 minima. Flight crews will be able to reach minimums as low as 200 feet, with half-mile visibility, and without the need of ground-based landing aids. It is no secret that unfavorable weather conditions in Non-Precision Approach (NPA) destinations often result in diversions, delays, and even cancellations. With the LPV approach, airports and airlines can prevent such inconveniences and overcome adverse circumstances. Pilots can land successfully and confidently even with poor visibility as opposed to finding alternate routes, landing at unfavorable locations, or even canceling the flight and causing inconvenient delays for crew and passengers.

What is LPV?

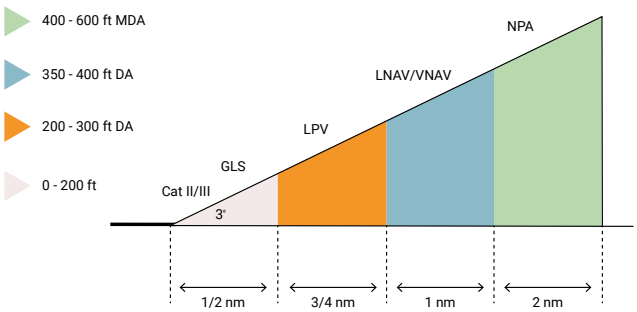
The approach is supported by a Space Based Augmentation System (SBAS), which is already available across several regions worldwide including Russia, India, Japan, WAAS in the U.S., and EGNOS in Europe. LPV operations are already established in North America, while in Europe the approach is in development for use across all instrument runway ends where currently only an NPA is published.

CMC Electronics CMA-5024 SBAS Receiver

The LPV approach uses an Area Navigation (RNAV) function that requires the use of SBAS. A Final Approach Segment (FAS) database is integrated into the SBAS receiver.

While lateral performance matches that of an ILS localizer, vertical guidance mirrors a geometric path in space. This is included in the approach procedure specs within the SBAS receiver navigation database.

At Fokker Services, our LPV capability fully complies with EASA AMC 20-28. The instrument approach procedure is a modern breakthrough in the aviation industry, offering incredibly precise GNSS capabilities to obtain the position of the aircraft.



Trends and Figures

- **EU:** APV procedures are to be established in all instrument runway ends in Europe by December 2020 in areas where exclusively NPA procedures are currently published. All runways should have an approach based on LNAV, VNAV, or LPV – with the latter becoming more preferable and common at regional airports. France is set to decommission approximately 50 ILS CAT I installations, resulting in impressive cost reduction for multiple parties. LPV approaches are designed to replace their CAT I counterparts entirely.
- **U.S.:** New CAT I capacity will be fulfilled via an LPV instrument approach in the U.S.
- **Canada:** There is an aim to install APV procedures on runways in Canada that currently lack precision approach procedures. These APV capabilities will be embraced across 80 airports served by ILS. While new ILS installations fail to radiate a useable back course signal, their LPV counterparts replace localizer back course approach capability.
- **India:** In India there is a plan to use LPV as a powerful ILS alternative, especially where ILS is under maintenance or unserviceable. LPV will prove indispensable on runways that lack ILS or at airports with constrained terrain, making ILS installation impractical.

The Solution

We have developed a unique LPV concept, whereby two dedicated SBAS receivers will be installed featuring integrated approach databases. With our solution for Boeing 737 Next Generation, Boeing 757, Airbus A320 Family, and more, there is no need to change existing avionics architecture. The LPV modification can be performed in various stages, including wiring installation, testing, and component installation. This way, our clients can embrace the modification with ease and efficiency, all during scheduled aircraft downtime for unobtrusive installation. With a properly equipped aircraft that has a sophisticated LPV solution, aircraft operators will enjoy significant time and financial savings, all thanks to the use of SBAS as a precise navigational aid.

Components

- 2 x TSO-C-146c GPS/SBAS receivers (CMA-5024).
- 2 x LPV Level of Service (LOS) annunciators.
- 2 x LPV fault indicators.
- 2 x ILS/LPV push button switches.

Benefits

- Fewer flight delays and cancellations, reducing Direct Operating Costs (DOC).
- ILS look-a-like means limited flight crew training is needed.
- No temperature effect with regards to LNAV/VNAV.
- Reduced separation during the approach reduces flight times.

Fokker Services

At Fokker Services, our drive revolves around one purpose: exceed reliability expectations to keep your aircraft where they belong, in the sky. As a Global Independent Aerospace Service Provider we create tailored solutions for your maintenance of regional, commercial and military aircraft. We engineer, repair, upgrade, and deliver made-to-measure solutions, innovating in multiple areas to facilitate and support your competitive operations. Our services range from type certificate holder-related product support services to flight hour based component availability and repair programs, spare parts, engineering, modifications and documentation support. The unique combination of OEM (design) expertise and after-sales support services makes us an essential partner for the aerospace industry. We have a global presence, with facilities in Europe, Asia and the Americas.

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