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.

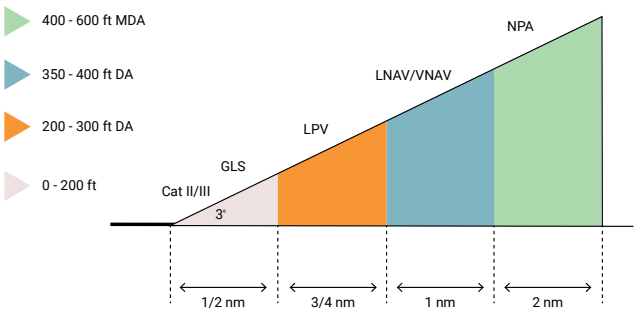
What is LPV?

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 Group, 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.

European Mandates

LPV is a mandate for European airport runways, which means that LPV approach capabilities must be implemented where there is appropriate EGNOS coverage. Some airports are already phasing out ILS CAT I systems, so aircraft will therefore need to have LPV capability if flying an LPV approach. These are the deadlines:

- December 3, 2020: Instrumental Runway Ends (IREs) served by non-precision approach (NPA) procedures. These are runways that only have lateral guidance, and not vertical guidance.
- January 25, 2024: IREs served by precision approach (PA) procedures. These are runways with instrument approaches and landing systems, including lateral and vertical guidance.
- June 6, 2030: Performance Based Navigation (PBN) will become normal operations, and LPV is part of the PBN concept. At this stage, ILS CAT I and also GLS CAT I, will become a secondary, back-up system.
- New SBAS Coverage: Runway ends need to implement LPV capabilities 18 months from the date that SBAS coverage becomes available.

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

- TSO-C-146c GPS/SBAS receivers
- Annunciators (LPV Fault, Mode indicator, LPV Loss of Service (LOS) and LP LOS)
- TSO C190 antennas
- Wiring, brackets, circuit breakers, and more

Benefits

- Fewer flight delays and cancellations, reducing Direct Operating Costs (DOC)
- ILS look-a-like means limited flight crew training
- Continuous Descent Operations (CDO) techniques result in reduced fuel carriage
- Straight-in approach option possible for some runways, allowing for flexible airspace usage

About Fokker Services Group

Fokker Services Group is an independent aviation aftermarket company with a global reach. Providing comprehensive solutions from its five facilities in Europe, Asia and the Americas, Fokker Services Group is a key partner for regional, narrow-body and wide-body platforms in the Commercial, VIP, Cargo and Defense markets. The organization offers a unique set of capabilities, products and services: 'Modifications & Engineering Services' for the latest technical solutions; 'Component & Material Services' such as nose-to-tail programs, exchange services, component repairs, parts manufacturing and spares deliveries; 'Airframe Services' for aircraft MRO including lease transitions and painting; and 'Aircraft Completion & Conversion Services' for Executive, VVIP and Special Mission aircraft upgrades. With this broad range of expertise, Fokker Services Group ensures the continued competitive operation of its customers' fleet.

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