

Drone for VOR and ILS/Infrastructure Advanced Maintenance

The all-in-one UAV solution for NavAids ground-check and more.

» Mission:

Inspection is a crucial factor for the evaluation of facilities performances as required by ICAO. Traditional procedures rely on ground check using special and expensive vehicles or instruments, together with periodical flight checks.

Based on these premises, Techno Sky, as part of ENAV Group, has developed its own RPAS solution UAV technology for near-ground flight inspections of NAVAIDS and more.



Operational Scenario:

The product relies on a high-performance drone that can be equipped with instruments required for the specific inspection, such as a compact ILS/VOR receiver/analyzer, spectrum analyzer, a high-resolution camera or infrared camera for visual inspections.

Key Benefits:

- Cost-effectiveness: if compared to traditional vehicles and instruments
- Flexibility: the drone payload can be adapted with instruments suitable for desired inspections
- High-performance hexacopter with GNSS RTK+ position accuracy
- Easily transportable by car, train airplane in its suitcase
- Operated by a single certified pilot
- Approved by Italian CAA as an alternative for Ground-Check-Vehicle

Regulations and certifications

- Reg. EU 2019/947
- ICAO Annex 10 Vol I
- ICAO Doc 8071 Vol I
- On-board flight firmware compliant with RTCA/Do-178 level D standard

Main technical features:

Our drone solution can inspect and perform measurements on the following types of facilities:

- ILS (GP and LOC)
- Marker
- VOR
- NDB
- PAPI
- Communication channels (VHF/UHF)
- GBAS
- Runway, Taxiway
- Airport lightning visual aid

The main measurement profiles for LOC, GP and VOR are the following:

- On course alignment: dynamic analysis of Localizer, carried out across the runway axis at constant speed and altitude, allows to analyze the magnitude of interest such as Difference in Depth of Modulation (DDM), Sum of Modulation Depths (SDM), Measurement of electric field strength (RF) and 90/150 Hz Modulations (MOD 90/150);
- On course stability: static analysis of the Localizer, carried out acquiring data in specific positions on the runway, allows analyzing the temporal stability of the magnitudes of interest
- Glide Path: static and dynamic analysis of GP, carried out raising the drone to a predetermined altitude on a fixed point (e.g. runway threshold), allows analyzing DDM and its temporal stability at several altitudes of the runway perpendicular
- VOR stability: static analysis of VOR antenna carried out acquiring data in specific positions on the reference radial or other default, allows analyzing the temporal stability of the magnitudes of interest.

Thanks to the flexibility of the Techno Sky RPAS, it is possible to mount several payloads on board our drone such as electro optical and/or infrared cameras and to allow other NAVAID inspections such as PAPI, runway, taxiways, RADOME, RADAR and several airport infrastructures.

Technical command and control console

Techno Sky RPAS is equipped with a customized HMI that allows planning of flight missions, command & control and real time data display. The HMI is battery powered and can be easily carried to site and mounted on a standard tripod. It includes all devices that allow a reliable and stable datalink with the drone during flight. It can be also equipped with an external differential high-precision GNSS positioning base station that allows the maximum accuracy of positioning system.