EGNOS: Augmenting Satellite Navigation

EGNOS, or the European Geostationary Navigation Overlay Service, is the first pan-European satellite navigation system. It is designed to augment GPS (the current satellite navigation system) to allow its use in safety critical applications such as air traffic or naval navigation. EGNOS is comprised of 3 geostationary satellites and a network of ground stations. With the data provided by EGNOS to the users (aircrafts, vessels) the reliability and accuracy of the position computed from the navigation signals of GPS can be significantly improved allowing users to determine their position within 1.5 metres and with a high level of Integrity (confidence level). This information is very important, in particular when conditions for flying or navigating your aircraft or your ship are less than nominal.

|  |  |
| --- | --- |
| Image | Text |
| 10:00:10-Images highway, tractor on the field, smartwatch with maps, girl on he train – unknow date – esa video Preparing Galileo Receivers – ESA- airplane landing and aroching – esa video Egnos improved landing safety – 2015 – ESA- outside Berlaymont building, European commission -> Brussels – 20/08/2015 – ESA- INT control tower simulator, Eurocontrol experimental centre, Paris – 2016 - EURONEWS- airplane taking off with EGNOS Logo, throttle airplane being pushed, close up on GPS system, pilot in plane using sat nav, POV airplane landing on runway, flying in the clouds – esa video Egnos improved landing safety – 2015 – ESA | Satellite navigation has become an integral part of our lives today. An area where satellite navigation plays a major role is air traffic control. For this safety critical domain the European space agency, ESA, the European Commission and Eurocontrol, the European organisation for the safety of air navigation, developed EGNOS which has been in use since 2011 and augments the existing GPS system. This increases the accuracy and the integrity of the position computed by the user. Nowadays, it has become an extremely reliable tool for pilots, helping them cope with whatever flying conditions they are faced with.  |
| 10:00:51-INT HELICOPTER, DANISH AIR AMBULANCE BASE, BILLUND, DENMARK - 2016 - EURONEWS | **Lars Korsgaard Kvols, Chief Pilot, Norwegian Air Ambulance AS, Denmark**With the new EGNOS system, which is much more accurate than the normal GPS system, we're able to get closer to the ground and be able to fly in weather that is - with lower clouds, lower visibility than what we are used to. |
| 10:01:09- INT HELICOPTER preparation and flight, DANISH AIR AMBULANCE BASE, BILLUND, DENMARK - 2016 – EURONEWS- Animation EGNOS space and groundsegment – Unknown date – ESA- INT HELICOPTER, DANISH AIR AMBULANCE BASE, BILLUND, DENMARK - 2016 – EURONEWS- Animation EGNOS in airplane– Unknown date – ESA | Here in Denmark, bad weather or limited visibility is something that these air ambulances or rescue helicopters are confronted with all too often. Before EGNOS, up to 10% of the missions had to be cancelled due to poor weather conditions, a tragedy for patients, whose safe and timely arrival at a hospital was often a matter of life or death. Now, with EGNOS, three geostationary satellites and a ground segment are working together to send an integrity signal to receivers in aircraft and helicopters. This increases the accuracy of the satellite navigation data to 1.5m, guarantee its quality and improving vertical positioning.  |
| 10:01:49- INT Helicopter simulator – REGA, ZURICH, SWITZERLAND -2016 EURONEWS | **Thomas Gnägi, Deputy chief pilot, Head of training, Swiss Air-Rescue Rega**We need that accuracy because of the terrain - we're getting very close to the mountains, and that's why we need a very accurate satellite system, and not only accurate but also reliable. |
| 10:02:04- REGA ARCHIVES: RESCUE OPERATIONS, HELICOPTER– unknown date - REGA- ARCHIVES: PASSENGER PLANES – unknown date – EUROCONTROL-INT control tower simulator, Eurocontrol experimental centre, Paris – 2016 - EURONEWS V/O | Today the number of aircraft or helicopters using EGNOS is slowly rising. For instance, the Swiss air-rescue service who fly over 11,000 missions a year equipped their helicopters with the new technology, anticipating a nationwide adaptation of EGNOS. EGNOS is also relevant for civil aviation as it can replace the traditional ground guidance systems needed for aircraft to land, providing a saving in the costs of local airport infrastructure. At Eurocontrol, experts are convinced EGNOS offers many benefits for aviation in Europe. |
| 10:02:40- INT control tower simulator, Eurocontrol experimental centre, Paris – 2016 - EURONEWS | **Aline Troadec, Satellite navigation expert, Eurocontrol  FRENCH**"EGNOS can provide a more efficient service than we had in the past, including improving access to certain airports in adverse weather conditions - so, better punctuality, fewer delays, less diversions to alternative airports." |
| 10:02:58-airport at night, passenger plane landing, AIRBUS Beluga landing, – esa video Egnos improved landing safety – 2015 – ESA- INT Helicopter simulator – REGA, ZURICH, SWITZERLAND -2016 EURONEWS-animations Galileo constellation and fly by – unknown date –ESA- GPS instrument close-up, Planing landing – esa video Egnos improved landing safety – 2015 – ESA | More and more airports in Europe are now certified for landing approaches based on EGNOS. And what is happening in air traffic management will surely be extended in many other applications that need to rely on guaranteed satellite navigation signals. EGNOS will soon augment both GPS and Galileo navigation data. Relying on 2 constellations will further improve its performances and reliability. |
| B-Roll |  |
| 10:03:32INT control tower simulator, Eurocontrol experimental centre, Paris – 2016 - EURONEWS | **Interview - Aline Troadec, Satellite navigation expert, Eurocontrol  FRENCH** |
| 10:07:32DANISH AIR AMBULANCE BASE, BILLUND, DENMARK - 2016 - EURONEWS | **Interview - Johannes Traberg Christiansen, Project manager, Danish Air Ambulance ENGLISH** |
| 10:08:27HELICOPTER, DANISH AIR AMBULANCE BASE, BILLUND, DENMARK - 2016 - EURONEWS | **Interview - Lars Korsgaard Kvols, Chief Pilot, Norwegian Air Ambulance AS, Denmark  ENGLISH**  |
| 10:09:46INT control tower simulator, Eurocontrol experimental centre, Paris – 2016 - EURONEWS | **Images of Eurocontrol Control tower simulator** |
| 10:11:52HELICOPTER, DANISH AIR AMBULANCE BASE, BILLUND, DENMARK - 2016 - EURONEWS | **Images of HELICOPTER, DANISH AIR AMBULANCE BASE, BILLUND, DENMARK** |
| 10:19:14 | **END**  |
|  |  |
|  |  |