

Heydar Aliyev International Airport (GYD) in Baku, Azerbaijan

Airport A-SMGCS - MLAT system and Vehicle Tracking

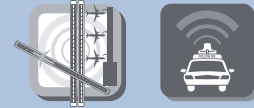
Introduction:

Heydar Aliyev International Airport (GYD), is the busiest airport in the Caucasus having seen a 240 % increase in flights over the last 10 years. The number has grown from 15.5 thousands flights in 2001 to 37 thousands in 2010. The airport has very strategic location on so called "Silk Way" connecting West with the East, hence becomes more and more attractive for transit and cargo flights. Economic development of Azerbaijan Republic increase business activities in the country which also increase passenger flow to Baku. There was also huge reconstruction program for the airport on-going at the same time: new modern building of international terminal, ATC centre and TWR, new large apron, new runways etc.

Challenge:

The increase in traffic has driven the need to implement additional airport surface surveillance to mitigate the risk of runway incursions and other ground traffic related incidents. The requirements of the customer had specified that the proposed system should have:

- complied with ICAO requirements CAT III
- complied with EUROCONTROL standards
- enhanced safety of the ground operations
- enhanced efficiency of use of runways, apron, taxiways and parking gates
- maximised runway capacity
- decreased the risk of financial losses because of the aircraft damages on the apron.



CHALLENGES:

- Mitigate the risk of runway incursions
- Ensure the safety of vehicle movements

SOLUTIONS:

- ATC system
- Surface movement radar
- MSS by ERA MLAT system
- Vehicle Tracking
- Data fusion

BENEFITS:

- Increasing safety
- Increasing efficiency of use of runways, apron, taxiways and parking gates
- Maximising runway capacity
- All weather functionality

STANDARDS:

- EUROCONTROL Op. Req. A-SMGCS L2
- EUROCAE ED-87B, ED-116

Solution:

Together with its partners, HITT and Terma, ERA was awarded a contract to deliver a solution consisting of an Air Traffic Control system fed by both new surface movement radar and Multi-sensor Surveillance System (MSS) by ERA in 2011. The multilateration system by ERA consists of 18 ground stations with support of 60 Vehicle Tracking Units SQUID using ADS-B technology.

The MLAT surface system is developed as extension of already successful implemented Wide Area Multilateration system Caspian Sea. The contract was built on the success the Azerbaijan Air Navigation Service (AZANS) has earlier experienced with ERA Wide Area Multilateration (WAM) system deployed to monitor low flying helicopters and aircraft over the Caspian Sea. This project started when air traffic operations become more demanding in oil and gas sector of Azerbaijan. The WAM system consists of 10 ground stations and the installation went operational in 2010.

The final solution has brought also the financial benefits to customer: the central processing unit could be shared by both systems thanks to the use of the standardized and modular solution of MSS by ERA.

Together with HITT, ERA provides also data fusion of existing airport systems for A-SMGCS: Approach radars, Flight Data plan system and Stop bar lightening system. Traffic displays for the new ATC tower are also part of the solution.

Partner:

Holland Institute of Traffic Technology (HITT) is a leading provider of quality traffic management and surveillance systems. HITT develops technology to improve safety, security and efficiency at airports and in marine environments. HITT Traffic provides turn-key solutions for: Advanced Surface Movement Guidance and Control Systems (A-SMGCS), Vessel Traffic Services (VTS), Platform Protection and Coastal Surveillance Systems (CSS).



Left - The accuracy diagrams have been calculated by the validated CASPER simulation tool. The simulations are based on simplified airport model and idealistic environment. Predicted MSS system accuracy H-RMS for level 5 m AGL is presented on figure.



PARTNER:

Azerbaijan Air Navigation Services

AZANS Department of „Azerbaijan Hava Yolları“ CJSC was established in 1996 and is the responsible body for ATC within the airspace of Azerbaijan Republic. The airspace is 165,400 sq. km, 86,600 of which is land and 78,000 sq. km is above the Caspian Sea area. Azerbaijan is farthest ECAC Member State to the east of Europe bordering with Kazakhstan, Turkmenistan, Russia, Iran, Georgia, Armenia and Turkey.

“We chose ERA because it is well known and proved company for MLAT systems. The new surface system utilizes the infrastructure previously deployed by ERA thus ensuring a smooth deployment and certification process.”

Farhan Guliyev,
Head of Development of
AZANS