

Success Story

Quadrant

ADS-B in the land of fire and ice

Isavia now provides a trans-Atlantic surveillance corridor with ADS-B, bridging Europe and North America.

About Isavia

The Reykjavik control area is among the largest in the world at approximately 5,4 million square kilometres. The control area extends from 61° North to the North Pole and from 0°E/W to the west of Greenland.

In 2007 Isavia first anticipated the future potential of ADS-B technology for greater flexibility and adaptability, along with assuring improved traffic flow, capacity, efficiency, and safety. Environmental benefits like reduced fuel consumption and lower CO₂ emissions were also deciding factors when choosing to implement ADS-B.

About Quadrant

Quadrant is flexible, modular and scalable with the ability to transition seamlessly from ADS-B to MLAT using the same ground station equipment. It therefore also offers an attractive upgrade path to total SSR replacement.

The low power consumption and low bandwidth make it an economical option and its robust design, built for extreme weather conditions, mean Iceland's glacial landscape and icy temperatures presented no challenge for the tough technology.

Project Highlights

- Advanced surveillance for one of the largest airspaces in the world
- Weather challenges due to glacial landscape and icy temperatures
- Designed for limited network infrastructure
- ADS-B, SDDS-NG and EUROCONTROL's ARTAS provide the whole surveillance chain
- Robust and maintenance-friendly ADS-B sensor

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The Challenge

Iceland is located near the Arctic Circle. Its sub-polar oceanic climate, with comparably high precipitation around freezing point required a product of superior quality in order to withstand harsh environmental conditions. Almost 80 per cent of the country is uninhabited, making it the least populated country in Europe. In fact, accessible locations to install standard surveillance systems were very limited. Finally, the insufficient radar coverage of Greenland at the time resulted in a provision of air traffic control partly managed by radio communication and aircraft were often separated by ICAO procedural control standards.

The Solution

Isavia selected Comsoft Solutions for the supply and installation of eight Quadrant ADS-B sensors covering the whole of Iceland and eight low power site monitors, with additional projects to include next generation surveillance Data Distribution System (SDDS-NG) and the tuning of ARTAS, EUROCONTROL's surveillance data processing system. A project for Greenland and the Faroe Islands included a further ten ADS-B ground stations, provided by an alternative vendor.

As part of the project Quadrant data is fed into ARTAS, for which Comsoft Solutions has been EUROCONTROL's industrial partner since 2001. This acts as an enabler for ADS-B and WAM.

"With the installation of the Comsoft Solutions ADS-B surveillance solution the coverage of Iceland's control area has been strengthened to meet the increasing demands of our service, safely tackling growing air traffic numbers as annual tourist numbers continue to increase."

Guðmundur J. Kristjánsson,
Project Manager,
Isavia



ARTAS applies the latest multi sensor tracking technology to deliver an outstanding level of accuracy and reliability using PSR, SSR, Mode S and ADS-B surveillance sources.

SDDS-NG was also implemented, to facilitate a uniform connection of surveillance sensors, using the ASTERIX standard and was an ideal solution for Iceland to manage the data from various radar sources.

In 2016 Isavia, picked up Janes Airport Review's annual award in the Service Provision category, for extending coverage to provide contiguous surveillance with ADS-B, from stations in Iceland, Greenland and the Faroe Islands.

Benefits at a glance

- Greater flexibility along with improved traffic flow, efficiency, and safety.
- Significant increase of capacity compared to procedural separation
- Eco-friendly solution by reducing fuel consumption and lower CO₂ emissions
- ADS-B is a cost effective alternative to SSR