

# DFS embraces new precision approach technology

Honeywell SmartPath® GBAS increases airspace efficiency and capacity with the prospect to lower airport costs



## Overview

With global air travel continuing to rise, airports need to find new ways to handle additional aircraft movements without incurring the costs of building more runways. GBAS has been identified by ICAO, the U.S. Federal Aviation Administration (FAA), and Eurocontrol as an enabler for improving air traffic and Honeywell's solution, the SmartPath Precision Landing System, is the world's only certified system. Bremen Airport in Germany was the first airport in the world to adopt the technology.



## AT A GLANCE

### Customer

Names: DFS Deutsche Flugsicherung GmbH  
Location: Bremen, Germany  
Industry: Air navigation service provider  
Website: [www.dfs.de](http://www.dfs.de)

### Honeywell solution

SmartPath Ground-Based Augmentation System (GBAS)

### Why DFS chose Honeywell

- ▶ GBAS identified by ICAO, FAA and Eurocontrol as an enabler for improving air traffic capacity
- ▶ Honeywell SmartPath is world's first and only certified GBAS system
- ▶ DFS wanted to familiarise itself with GBAS as the organisation sees it as an eventual successor to ILS technology

### Customer results

- ▶ Reduced the chances of taxi time delay and much less impact from weather or significant sitting obstacles on the airfield, unlike ILS critical areas
- ▶ Significantly reduced maintenance effort as GBAS requires fewer checks by flight inspection than ILS systems
- ▶ Used by airlines under IMC down to CAT I decision altitudes



## Background

Soaring demand for air travel means that major airports around the world are being forced to increase their operating capacity.

As pressure on infrastructure increases, many airports need to maximise the number of aircraft movements that can make use of their existing runways and airspace and, at the same time, keep flight delays to a minimum – particularly when they are affected by bad weather.

Additionally, in many parts of the world, airports and airlines are required to reduce the environmental impact of their operations – both in terms of noise and emissions.

The FAA NextGen and Eurocontrol's SESAR programmes have identified ground-based augmentation systems (GBAS) as an enabler for improving air traffic capacity.

Honeywell is leading the way with the world's only certified GBAS solution, the SmartPath Precision Landing System. Progressive airports, air navigation service providers and airlines are already benefiting from this next-generation precision approach and landing technology.



## Solution

Honeywell's SmartPath Precision Landing System is now being installed at airports around the globe.

The technology enables the airports to offer up to 26 different precision approaches using a single system and, unlike instrument landing systems (ILS) that need to be installed at the end of every runway, one GBAS can cover an entire airport's operation.

SmartPath augments global positioning system (GPS) satellite data and transmits digital guidance information to aircraft that are equipped with Global Navigation Satellite System (GNSS) Landing Systems (GLS).

Most modern major airline platforms have the capability to fly GBAS approaches, with future models standardised on this advanced technology.

Honeywell's SmartPath Precision Landing System provides differential GPS correction and integrity for all satellites in view and approach path information covering all runway ends.

Currently certified for Category I operations, SmartPath GBAS will continue to grow to provide Category II and Category III performance.



## Benefits

Bremen Airport in Germany was the first airport in the world to adopt GBAS, with a system installed for the nation's air navigation services provider, DFS Deutsche Flugsicherung GmbH.

DFS identified GBAS as an eventual successor to ageing ILS technology and wanted to familiarise itself with the system. It chose Bremen Airport for GBAS operational evaluation as the airfield offered moderate levels of air traffic in a simple operating environment without high terrain.

The technology has gained German-type certification as a primary landing system from the Federal Supervisory Authority for Air Navigation Services (BAF) and is now being used independently of the ILS for CAT I precision approaches.

"There is an ICAO trend to introduce GBAS as a replacement for ILS technology that is more than six decades old," said Jochen Kreher, Head of Satellite Navigation, DFS Deutsche Flugsicherung GmbH.

“Everyone expects GBAS to provide cost efficiencies but I am more interested in the important operational benefits that the technology could provide.

“The technology offers significant benefits for flight operations and in the maintenance [compared to an ILS], which make it attractive.

“Firstly, weather and obstacles have a much reduced negative impact on the system. Secondly, the equipment does not need to be surrounded by a protected area to prevent possible interference by taxiing aircraft.

“Furthermore, up to 26 arrivals, destined for various runways, can be supported by just one GBAS station. On top of that, the system does not need to be checked by flight inspection as often as an ILS system. This will reduce our maintenance effort by a significant amount.

“Having said that, GBAS has proven to be very reliable and we have been told by pilots, who are used to ILS needles wobbling during the approach, that the system gives such a precise and stable cockpit display that they have not always been convinced that it’s working.

“GBAS will be the future of precision approach – first alongside and then, when all aircraft are equipped with the appropriate on-board receivers, as a replacement for ILS.”

Air Berlin has already received approval for unlimited use of the GBAS system for its Boeing 737NG fleet under CAT I meteorological conditions and DFS says that the organisation is in discussion with other German airports about the installation of GBAS on a cost-share basis.



## Operational benefits

### Airlines

Flexible approach geometries	>>>	reduction of track miles	>>>	reduced fuel burn emissions
Reduced flight inspection times	>>>	less airport down time	>>>	better punctuality and fewer delays

### Airports

No ILS critical areas	>>>	maximized use of airport taxiways and runways
Flexible installation	>>>	more efficient use of airport real estate
Flexible approach geometries	>>>	improved noise abatement

### Air Navigation Service Providers

26 approaches per station	>>>	greater precision approach capability	>>>	fewer navigation frequencies required per airport
Flexibility in physical location of installation	>>>	allows provision of precision approach, where previously unavailable		
Reduce flight inspection times	>>>	cost savings, reduction of airport down times and simplifies changes to flight procedures		
Simplified changes to flight procedures	>>>	Greater flexibility in procedure design	>>>	optimized utilization of airspace

“GBAS offers significant benefits for flight operations and in the maintenance [compared to an ILS] which make it attractive for many airports. GBAS will be the future of precision approach”



**Jochen Kreher,**  
Head of Satellite Navigation,  
DFS Deutsche Flugsicherung GmbH

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