

# UNITED AIRLINES PIONEERS USE OF NEXT GENERATION PRECISION LANDING SYSTEMS

Honeywell ground-based augmentation system (GBAS) improves airspace efficiency and capacity

**RON RENK,  
CHIEF NAVIGATION PILOT,  
UNITED AIRLINES**

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**Honeywell**

**UNITED** 

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Newark Liberty International Airport experiences chronic congestion and United Airlines is affected because Newark is one of its largest hubs. To address the problem and prepare for even more growth in air travel, the Port Authority of New York and New Jersey, which operates Newark Liberty, has installed Honeywell's SmartPath Precision Landing System. United is equipping its aircraft to use the Honeywell system.

## BACKGROUND

Just 10 miles south-west of mid-town Manhattan, Newark Liberty International Airport is owned and operated by the Port Authority of New York and New Jersey. In 2012, Newark handled 34 million passengers.

United and its United Express regional partner airlines operate an average of 5,472 flights a day to 381 airports on six continents. In 2012, United and United Express carried more passenger traffic than any other airline in the world, with over two million flights carrying 142 million passengers. United and United Express currently operate 192 mainline and 215 regional flights a day from Newark.

## BUSINESS NEED

Newark Liberty is the busiest airport in the New York-New Jersey metropolitan area for flights and is impacted by the serious airspace congestion that affects all airports in the region.

With the ever increasing demand for air travel, it is vital for the airport to maximise the use of its existing runways and airspace and to reduce delays.



A key element of this strategy at Newark is to make better use of Runway 29. The runway is situated at the north end of the airport and must be approached from the east, in airspace limited by the Manhattan skyline and operations at La Guardia and JFK.

Use of a traditional instrument landing system (ILS), which requires a ten to 15 mile straight-in final approach, is impossible. As a result, the Port Authority and United have a vested interest in reducing congestion and delay by using Runway 29 more frequently.

"Right now, our primary interest is delay mitigation at Newark," said Glenn Morse, director – industry affairs at United.

"The airport has a finite capacity from a regulatory perspective, so for now, we want to maintain the capacity we currently enjoy under the best visual weather conditions. Our primary thrust is to deliver the same number of aircraft movements despite adverse wind and weather.

"The airport needs new ways of handling traffic without incurring the cost of building additional runways and United wants to be at the forefront of next generation precision landing technology.

## QUICK FACTS

### Customer

Name: United Airlines  
Location: Chicago, Illinois, USA  
Industry: Airline  
Website: [www.united.com](http://www.united.com)

### Honeywell Solution

SmartPath Precision Landing System

### Customer Results

- Multiple glidepaths and touchdown points can reduce existing wake turbulence separation requirements and increase runway and airport capacity

- Adding precision approach capability to Newark Runway 29 ensures a stabilised approach and will reduce delays
- Reduced maintenance and flight check requirements and greater system availability
- Minimal training for pilots

### Why United Airlines partnered with Honeywell and PANYNJ

- United Airlines believes GBAS (Honeywell SmartPath) is the precision landing system of the future
- Honeywell is the leader in the development of GBAS
- Honeywell's SmartPath Precision Landing System is the world's first and only certified GBAS solution



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## SOLUTION

Currently the world's first and only certified GBAS system, Honeywell SmartPath is FAA certified for Category I operations, with plans to grow to Category II and III performance. It offers future capability to reduce the long, straight approach paths required by the legacy ILS, as well as the need to have dedicated instrumentation for a precision approach on every runway end. One GBAS satellite-based navigation system covers an entire airport and can provide up to 26 different precision approaches.

Newark Liberty became the first major US hub to install SmartPath through a collaborative partnership that included the FAA, Port Authority, Honeywell, and Continental Airlines (now United Airlines).

"We are pleased to enter a partnership with the FAA to help advance next generation technology within the congested New York/Newark airspace," stated then Port Authority executive director, Chris Ward upon the programme's inception.

"Co-operation between the FAA and Port Authority on the nagging problem of flight delays is essential to alleviating the problem here in the region and across the nation."

Following extensive testing and research, the system went into service in September 2012.

In recognition of the significant technical challenges encountered prior to commissioning of the facility, the Port Authority, FAA SatNav and Honeywell SmartPath teams are collectively a finalist for the Aviation Week Laureates Award.

To receive SmartPath's approach data, aircraft must be equipped with global navigation satellite system (GNSS) landing systems (GLS).

United currently has over 50 equipped aircraft, mainly Boeing 737s and Boeing 787s, and all its new 737s, 787s and Airbus A350s will come equipped to use SmartPath. GLS is also expected to be standard equipment on most future production commercial aircraft from the major manufacturers.

"As industry leaders, we have presumed that Honeywell's GBAS is going to be the air carrier precision landing system of the future," said Morse.

"We have been working for many years to mature the technology and ensure that our aircraft have GBAS capability but, while we believe there are phenomenal capabilities associated with the system, it's a very long process that doesn't occur overnight."

"In anticipation of the installation of more ground stations in the US and overseas, we've been taking delivery of GLS-equipped aircraft since 2009."

## BENEFITS

With only a few months of operation, interrupted by Hurricane Sandy, Newark Liberty is still assessing the value of Honeywell SmartPath. It is hoped that the use of multiple glidepaths and its other unique approach capabilities will mitigate wake turbulence separation requirements and allow the use of simultaneous parallel approaches, thereby increasing capacity and reducing delays.

Another anticipated benefit is system availability: during the severe weather conditions encountered in late October 2011, the GBAS equipment at Newark remained operational while the other instrument landing systems were out of service due to heavy snow.

In the future, passengers should also see the benefits of shorter takeoff queues. Airport real estate that usually has to be kept free of aircraft during ILS operations is not restricted for GBAS operations. This opens up faster routings to the runway.

From a pilot's point of view, GBAS has been architected to work identically to ILS. The only difference is the nomenclature the pilot sees on the display and, instead of tuning into a frequency, they now tune a channel to select a specific procedure.

From a flying perspective, it is identical to ILS, which simplifies training. No specific simulator training or checking is required as pilots just undergo Level B training by bulletin.

"Newark is an ideal airfield to choose for the Honeywell GBAS because it is a hub airport where we circulate a lot of aircraft and it's also an international gateway," said Ron Renk, chief navigation pilot with United Airlines.

"A primary hope for the precision landing system is that it will offer an approach to Runway 29. This is our goal, but it still requires some additional technologies and studies on curved path final approaches.

"We believe that GBAS is the air carrier precision landing system of the future and we would like to see all major airports equipped with it."

Morse added: "We believe that the GBAS technology has a wealth of operating capabilities and over time we are hopeful that procedures can be developed that will allow us to use Newark's closely spaced parallel runways during more weather conditions."

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