

Honeywell



SmartRunway™ and SmartLanding™

Leading safety solutions that reduce the risk of runway incursions and excursions

Improving runway safety on approach, landing and roll-out and during taxi and take-off.

Runway safety is a key concern. Runway incursions and excursions have a variety of causes and are often the result of a combination of factors, including limited visibility, poor lighting, bad weather, inadequate paint lines, and confusing signs. This key safety issue is also costly, accounting for U.S. \$1 Billion per year for inspections, repairs and passenger injuries. There is approximately one runway incursion per day worldwide, and while runway excursions are less frequent, they are far more costly, accounting for approximately 90% of the expenses associated with runway incidents.

As air traffic increases and airports become more congested, there is a need for runway safety equipment. Designed to break the chain of events leading to either a runway incursion or a runway excursion, Honeywell's SmartRunway and SmartLanding products increase flight safety by improving situational awareness for pilots and crew members during approach, landing, taxi and take-off. These next-generation solutions build upon existing Honeywell technologies to deliver enhanced performance with smarter alerts and added visual messaging.

Both products are software upgrades to existing EGPWS MK V and MK VII systems, which has proven itself for over 600 million flight hours, and can be enabled with the -230-230 release.

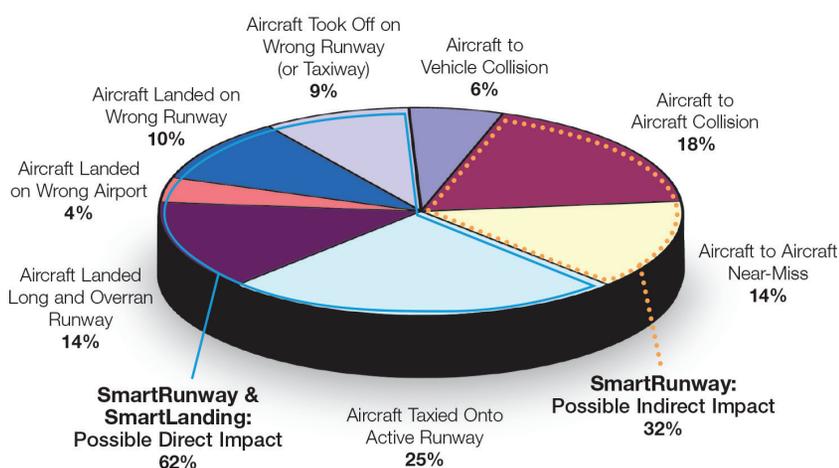


SmartRunway

Honeywell's SmartRunway addresses one of the National Transportation Safety Board's (NTSB) top 10 global safety concerns — runway incursions. SmartRunway is the next generation of Honeywell's Runway Awareness and Advisory System (RAAS) which is a proven runway safety system.

SmartRunway includes new advisories and visual messaging and complements electronic flight bag (EFB) solutions, if installed, through 'heads-up' advisories and supports 'quiet' cockpits with graphical alerts. SmartRunway is a proven global solution for reducing runway incursions.

Common causes of runway incursions and excursion





SmartLanding

Another key safety issue and NTSB concern is the appropriate energy level for landing, required landing distance, and adequate safety margin when landing; all key areas that are addressed with Honeywell's SmartLanding package.

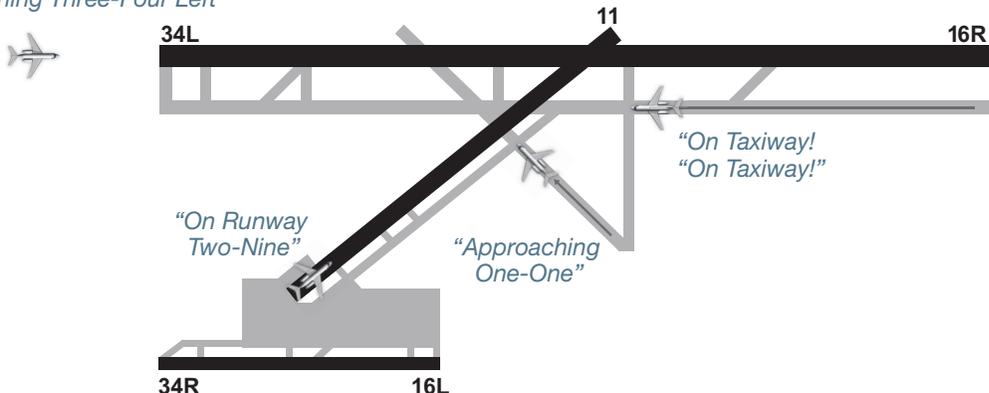
Runway excursions are typically caused when an aircraft has a hard or long landing from approaching the runway too high or too fast*, common components of an unstable approach, or when the aircraft is not properly configured for landing. There are approximately 30 global runway excursions each year, primarily caused by lack of situational awareness and human error. Runway excursions represent 96% of the total runway related accidents, and 80% of those runway excursions have resulted in fatalities.

Honeywell's new SmartLanding improves flight safety and helps reduce the risk of a runway excursion by alerting crew members if the aircraft is going too fast, too high or going to incur a long landing. SmartLanding encourages compliance with stabilized approach criteria, such as:

- Aircraft should be stable at 1000 feet above the field
- Aircraft MUST be stable at 500 feet above the field
- Aircraft is properly configured to land
- Aircraft is on the correct vertical path
- Aircraft is at the correct speed*

Under normal conditions, no advisory would be heard or displayed. When the aircraft is approaching the runway too fast or too high, a callout and visual advisory will be issued. Another callout and graphical advisory is available for long landing, which occurs when the aircraft extends beyond a customer-defined touchdown zone, followed by distance remaining on the runway. Also included is a check for inadvertent barometric altimeter correction setting errors, which have been a contributing factor for incidents and accidents during approach and landing in the past.

"Approaching Three-Four Left"



Advisories

Capability/Feature	RAAS	SmartRunway	SmartLanding
Approaching Runway (on Ground)	X	X	
On Runway	X	X	
Approaching Runway (in Air)	X	X	X
Distance Remaining (Landing & Rollout)	X	X	X
Runway End	X	X	
Extended Holding	X	X	
Taxiway Takeoff	X	X	
Taxiway Landing	X	X	X
Short Runway Takeoff	X	X	
Short Runway Landing	X	X	X
Distance Remaining (Rejected Takeoff)	X	X	
Takeoff Flaps		X	
Flaps during Approach			X
Too Fast during Approach*			X
Too High during Approach			X
Unstable during Approach			X
Long Landing (Deep Landing)			X
Distance Remaining (Long Landing)			X
Check Altimeter Setting			X

*Future enhancement for business aircraft

Key Benefits

- Decreases the risk of runway incursions and excursions
- Increases runway situational awareness and the likelihood of stabilized approaches
- Supports 'heads-up' operations with aural advisories
- Supports 'quiet' cockpits with visual advisories
- Configurable to fit operating environment requirements
- Inhibit switches are optional
- Positioned for future growth and ADS-B implementation

System configuration

SmartRunway and SmartLanding are available today. They are customizable to best suit individual operating environments, including volume control and optional inhibit switches. And installation is simple as a low-cost software upgrade to Honeywell's Mark V or Mark VII EGPWS, which requires minimal aircraft downtime and minimal pilot training.

Honeywell Aerospace

Honeywell avionics are based on proven technology providing exceptionally high reliability and simplified maintenance. To help ensure optimal operation conditions, Honeywell provides comprehensive installation consultation and support tailored to the unique needs of each operator including regularly scheduled maintenance plans, pilot training courses and support documentation. Our customer support engineers are strategically located around the world to provide efficient and responsive support, when and where you need it. Honeywell remains unsurpassed in the scope and variety of service, which range from SPEX exchange of line replaceable units to personalized service contracts designed to fit the resources and circumstances of every operation.

Find out more

For further information on Honeywell's SmartRunway and SmartLanding, visit us online at aerospace.honeywell.com/runwaysafety

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