

SPOTLIGHT ON AIRPORT TRAFFIC SAFETY

STRATEGIES FOR PREVENTING RUNWAY INCURSIONS



Runway incursions are a leading security concern for airports across the world. According to the U.S. Bureau of Transportation Statistics, annual flights from U.S. airports increased from 8.8 million in 2015 to 9.2 million in 2018. Along with this airport traffic increase, the Federal Aviation Administration reported that runway incursions increased from 1,458 in 2015 to 1,832 in 2019, elevating the risk of fatal collisions.

STOP BAR TECHNOLOGY

A technological solution that has emerged to address these safety risks is the implementation of stop bars, a series of lights on the taxiway to signify runway status between the pilot and Air Traffic Control (ATC). The lights are spaced 3 meters apart and located 0.3 meters before each runway holding point. They are typically located across the taxiway where aircraft are required to stop, displaying red lights in the direction of approach to the runway and switching off to signify readiness for the aircraft to enter the active runway.

Stop bars provide protection at runway/taxiway intersections and reduce the risk of runway incursions through:

- Enhanced visibility of runway hold points
- Minimized risk of aircraft or vehicle identification error
- Improved safety during low visibility operations

MAXIMIZING DETECTION PROBABILITY WITH SENSORS

There are many detection sensor types that can be integrated with traditional aircraft stop bar safety systems to ensure reliable, effective detection of aircraft or vehicle movement between taxiway and active runway for optimal security operations. One such technology, induction loop sensors, require invasive construction to install cable into the taxiway surface, often requiring airport operations to cease causing revenue loss.

Southwest Microwave's **Model 316-33470 Stop Bar Control Sensors** are installed above ground for ease of installation and maintenance without negative impact to airport operations. These sensors deliver reliable performance in all weather conditions and feature enhanced electromagnetic compatibility (EMC) circuitry to prevent electromagnetic interference (EMI). The Stop Bar Control sensors have been installed at more than 100+ airports worldwide to minimize incursion risks.

CASE STUDY: SYDNEY AIRPORT

In 2012, Sydney Airport installed Southwest Microwave Model 316-33470 Stop Bar Sensors at all 47 runway hold points along Runway 07/25, Runway 16R/34L and Runway 16L/34R as part of their \$25 million runway safety upgrade program.

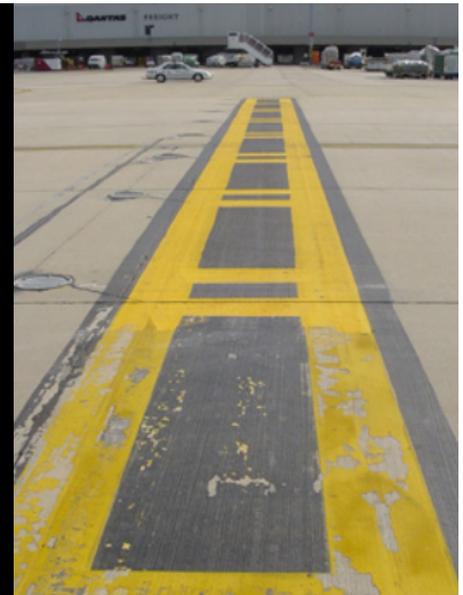
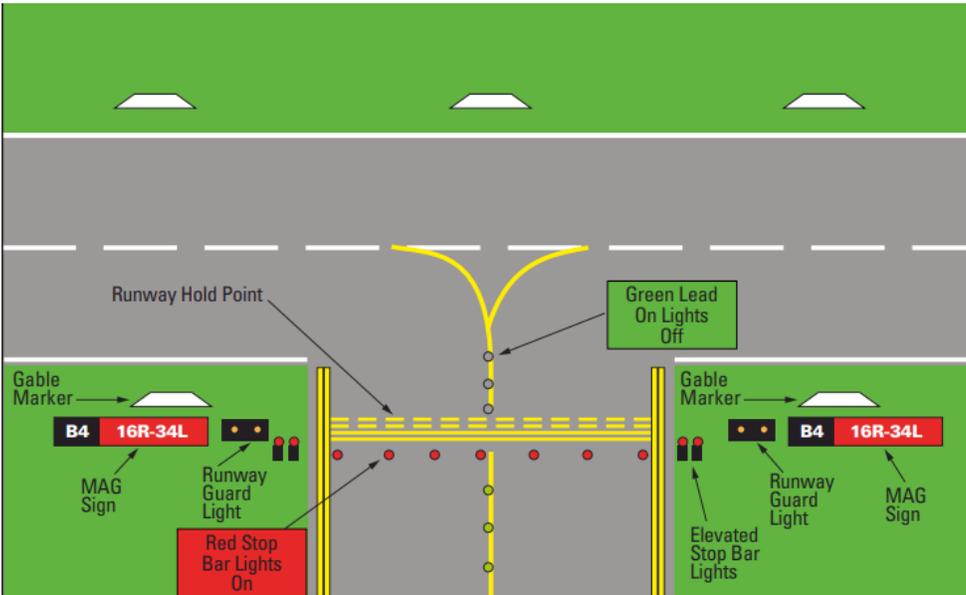
The effort also consisted of developing new protocols and training. Pilots and vehicle operators are required to stop at the runway hold point and obtain clearance from ATC prior to entering a runway. Clearance to enter the runway entails the extinguishing of the red stop bar lights by ATC. When the stop bar is extinguished, a set of green 'lead on' lights will illuminate from the runway hold point to a point in line with the runway edge line. Aircrafts are not to proceed until verbal clearance is received from ATC after stop bar lights are extinguished.

Today, Sydney Airport's stop bar implementation is viewed as a model practice for international airports in the reduction of incursion risks.

Southwest Microwave has been a trusted global supplier of perimeter detection technologies since 1971. For further information about Model 316-33470 Volumetric Stop Bar Control Sensors and other perimeter security solutions, visit www.southwestmicrowave.com.



Southwest Microwave Volumetric Stop Bar Control Sensors at Sydney Airport. Source: Sydney Airport



Stop Bar Clearance Protocol: Aircraft Not to Cross When Stop Bar Lights Are Red. Proceed Through Hold Point ONLY After Stop Bar Lights Are Extinguished, Green Lead On Lights Are Illuminated and ATC Clearance Is Issued. Source: Sydney Airport

Inset Stop Bars at Runway Hold Points. Source: Sydney Airport



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