



Monitoring a Critical Airfield Access Point

Kassel Airport, a regional hub located in northern Hesse, Germany, needed a reliable way to monitor a transitional area leading onto the airfield. Since the crossing is used primarily by aircraft and occasionally by service vehicles, physical barriers like gates or fences were not practical due to the large clearance required. The airport needed a virtual barrier that would trigger alerts upon unauthorized crossings, regardless of weather or other environmental factors.

A previously installed camera-based system proved too sensitive under challenging weather conditions. After evaluating the situation with Siemens, the airport decided to switch to a 3D LiDAR-based solution from Blickfeld.

CHALLENGE

Kassel Airport faced the challenge of reliably monitoring two access points to the airfield in a way that would remain effective in all weather conditions. The system needed to detect whether people, vehicles, or aircraft crossed the virtual boundary, and trigger alerts based on the direction of movement.

Initially, the airport relied on video analytics. However, this system frequently produced false alerts due to its dependence on pixel changes within defined zones. Poor weather conditions such as rain, glare from low sun, snow, or darkness triggered numerous unnecessary alerts. During storms or heavy rain, alerts were generated every few minutes, overwhelming the system and potentially causing alarm fatigue among personnel.

To improve accuracy, AI-enhanced cameras were tested, but these introduced a new issue: they could detect people and vehicles, but not aircrafts. As a result, this approach was unsuitable for airport operations involving regular aircraft movement.



SOLUTION

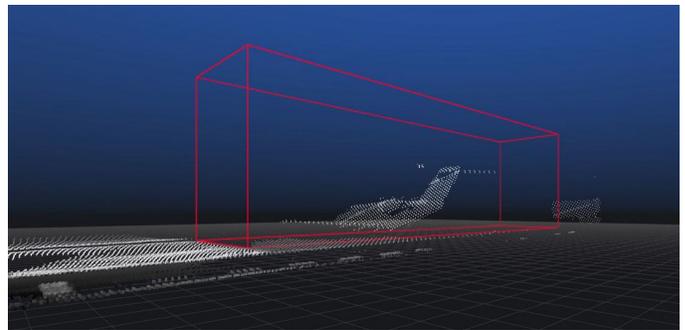
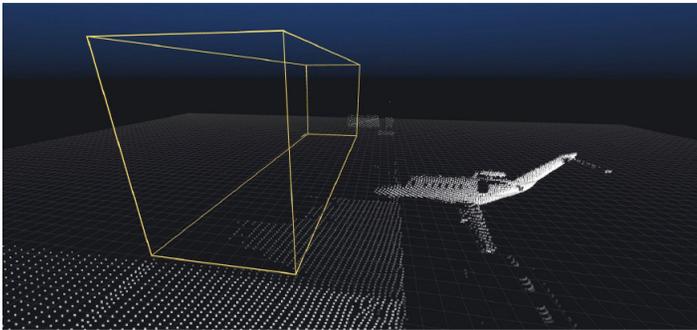
To create a more robust solution, Kassel Airport evaluated a security system from Siemens that incorporated Blickfeld's 3D LiDAR technology. The Smart 3D LiDAR sensors offer a wide field of view – one sensor was sufficient to monitor the entire 60-meter-wide access zone during testing.

The sensor's integrated analytics software interprets 3D data to reliably distinguish between object types based on size and motion. This enabled accurate detection of aircraft while ignoring irrelevant factors, significantly reducing false alerts.

Another benefit came from depth perception: taller vehicles like buses no longer triggered false alarms when their shadows crossed the virtual barrier, as the LiDAR did not misinterpret these shadows – something that had been a recurring problem with camera systems. With 3D data, the exact location of the object is identified, eliminating this source of error.

The system also features directional detection, ensuring alerts are only triggered when objects move across the barrier in a defined direction. This prevents false positives from vehicles or individuals moving within the zone in the correct direction.

Implementation was carried out entirely remotely, Blickfeld engineers did not need to be on-site. Kassel Airport was able to integrate the solution independently. After successful testing, the airport fully transitioned to LiDAR and has since deployed additional sensors at other access points.



Blickfeld LiDAR sensors monitor the 60-metre-wide transition path and reliably detect aircrafts. An event message is only triggered if an object moves across the barrier in a defined direction, significantly reducing false alarms.

RESULTS

The introduction of 3D LiDAR technology has significantly improved the monitoring of airfield access at Kassel Airport. Directional detection and resistance to weather conditions have led to a sharp decline in false alerts, increasing reliability and easing the workload on airport personnel.

OUTLOOK

During operation, the first signs of required maintenance have appeared – mostly due to bird activity. Bird droppings occasionally obstruct the sensor's view, and pecking caused minor damage to the housing. The airport is now addressing these issues to ensure long-term sensor durability and performance.

Monitoring with Blickfeld's LiDAR scanner has made object detection at Kassel Airport significantly more reliable - even in challenging weather. Objects are accurately classified in 3D space, and alerts are now limited to relevant events. Our staff has seen a measurable reduction in workload.

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