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HOW SCHIPHOL AIRPORT USES BIRD RADAR TO MITIGATE BIRD STRIKES

A CASE STUDY

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Amsterdam Schiphol Airport is the main international airport in the Netherlands and is the third busiest airport in Europe. Schiphol has six runways and handles more than 100 flights per hour.



Ton Mens is the Wildlife Hazard Manager at Schiphol and supervises the bird controllers, collates bird data, advises on habitat management, and decides when and where birds need to be dispersed.



CHALLENGES

"BIRD STRIKES ARE ONE OF THE TOP THREE SAFETY RISKS AT THE AIRPORT."

"The bird control team is responsible for monitoring birds in and around the airport, scaring them away, or otherwise dispersing them, as and when the situation calls for it."

"WE HAVE A VERY LARGE AIRPORT AND, IF A BIRD CONTROLLER WAS STANDING AT THE EAST SIDE OF THE AIRPORT, THEN HE COULDN'T SEE WHAT WAS HAPPENING AT THE NORTH SIDE. THERE'S ONLY SO MUCH YOU CAN SEE WITH BINOCULARS."

"During fog and dark we couldn't make observations at all. We could sometimes hear them (the birds), so we knew they were there. But we couldn't see them and, of course, we couldn't then shoot them or scare them away."

"SOMETIMES WE'D GET A REPORT FROM A PILOT ABOUT A FLOCK OF BIRDS AT THE END OF A RUNWAY. I'D HAVE TO PUT A CALL OUT ON THE RADIO ASKING WHO WAS CLOSE TO THAT AREA AND ABLE TO GO THAT LOCATION, FOLLOWED BY A DISCUSSION ABOUT WHO WOULD TAKE ACTION. IT WASN'T THE MOST EFFECTIVE WAY OF WORKING AND WE LOST A LOT OF TIME."

Mitigating bird strikes is not just about avoiding the birds that are there. It's also about habitat management at the airport and in the surrounding area.

"We had a lot of issues with geese. And we suspected it was because of the crops around the airport. Crops that were attracting the geese."

Making changes to crop lands around the airport can have large economic impacts. One of the challenges was that the bird controllers had no data to back up their observations and recommendations.

"IT WAS HARD TO GIVE ANSWERS TO CERTAIN QUESTIONS - TO EXPLAIN WHY CERTAIN THINGS WERE HAPPENING. FOR EXAMPLE, 'WHY ARE THERE X MANY BIRD STRIKES'? WE CAN SAY THAT WE THINK IT'S DUE TO MIGRATION, BUT WE DIDN'T HAVE THE DATA TO BACK THAT UP."

ROBIN's 3D Flex system consists of a horizontal S-band radar, combined with a flexible Frequency Modulated Continuous Wave (FMCW) radar.

The horizontal S-band radar identifies the presence and number of birds, tracking them – including their location, height, direction, speed and route – up to 10 kilometres away, all around, day and night.



SOLUTION

Schiphol had identified three products which might help: two radars and one optical (camera) system.

“THE OPTICAL SYSTEM DIDN'T WORK. AND BETWEEN THE RADAR SYSTEMS, ROBIN RADAR WAS THE BEST.”

Schiphol first deployed a single bird radar (Robin 3D Flex) at the 'Polderbaan', one of its six runways. After successful testing Schiphol acquired four more 3D Flex radars to cover the entire airport.

Robin Radar Systems' 3D Flex radars detect and track birds in and around the airport up to 6-8km away. They also provide the height information of the birds. Each bird controller receives the radar data on an iPad in their vehicles.

“THE FIRST IMPRESSION WAS, WOW! THAT THIS IS POSSIBLE!”

Being a new technology, there was also some scepticism.

“IF YOU SHOW THE DATA, AND YOU TELL PEOPLE, YOU CAN SEE TWO MILLION BIRD TRACKS AT THE AIRPORT IN JUST 24 HOURS? NOBODY COULD BELIEVE THAT!”

Of course that doesn't mean there are two million birds. The radar measures each bird movement that it sees. And an individual bird can generate several, even hundreds, of bird movements in a day.

“THE RADAR SYSTEM REALLY SEES EVERYTHING THERE IS TO SEE. AND THAT'S SO MUCH MORE THAN WE EVER THOUGHT. ALSO AT NIGHT AND IN FOG, THERE ARE A LOT OF BIRDS OVER THE AIRPORT”.

“Because there's so much information coming from the radar, we chose not to show single tracks on the iPads. The bird controllers are driving through operational areas with airplanes, etc. They have no time, and it's not safe even, to fully analyse everything on the screen.”

“They have to see a red dot and know that they need to go there. So we convert the radar data into heat maps, showing bird intensity. And we also show the locations of the bird controllers on the screens too.”

“IT MAKES COORDINATING THE BIRD CONTROLLERS MUCH MORE EFFECTIVE. IT'S A MAJOR IMPROVEMENT IN OUR BIRD CONTROL OPERATION.”

RESULTS

“The data that Robin provides; we can now give better answers to the questions we get asked. For example, ‘why are there X many bird strikes’? Now we can say, because there are more birds. It’s been a good Spring, good Summer, good breeding season, more bird migration, etc. And now we can show that with data. That this is what’s happening.”

“BECAUSE WE CAN SEE WHERE THE BIRDS ARE, AT WHAT TIME OF THE DAY, AND THE TIME OF YEAR, - BUILDING UP HISTORICAL DATA - WE CAN MAKE BETTER SOLUTIONS TO USE OUR RUNWAYS.”

“We understand when the migration periods are, the busy times of the day, what effect the weather has on bird movements, etc. And we can break it down by day, by week, by month, by year, by season. And eventually we’ll be able to compare it with previous years and see if the change is successful.”

“In the past we had a lot of issues with geese; likely due to certain crops around the airport. So now, with the radar, we can measure the effect of what happens to bird migration when we change those crops.”

“WITH THE NEW RADAR, WE’RE ABLE TO ACCURATELY MEASURE THE EFFECT OF CHANGES IN HABITAT MANAGEMENT AROUND THE AIRPORT. WE COULDN’T DO THAT BEFORE.”



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**DO YOU NEED TO
MITIGATE BIRD STRIKES
AT YOUR AIRPORT TOO?**

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