



YOUR LONDON AIRPORT *Gatwick*

Home to more than 60 airlines and serving more than 43 million passengers every year, London's Gatwick Airport (LGW) is the second busiest airport in the UK and the world's most efficient single runway airport.

CASE STUDY

Gatwick Airport (LGW) stays in the know on passenger flow

HOW LGW COUNTS ON XOVIS TO MAINTAIN THE HIGH SERVICE LEVEL

CHALLENGE

London's Gatwick Airport (LGW) is and wants to remain the world's most efficient single runway airport. Maintaining assets as well as a high-level service standard, Gatwick commits to providing the best possible passenger experience. Dedicated to meet these expectations, LGW is confronted with the following questions:

- How to maintain a high-level passenger experience along with continuous growth and increasing service expectations?
- How to live up simultaneously to the expectations of passengers, partners and regulators?

SOLUTION

To face the challenge of maintaining a high service level standard despite busy daily operations, Gatwick monitors passenger movements as part of an overall data strategy. Roughly 250 Xovis 3D Sensors measure KPIs such as queue length and waiting times in various sites. Xovis data is the basis for performance reports and features:

- Accuracy that does not depend on signal emitting devices. Xovis delivers reliable data in dynamic areas such as check-in.
- Automated queue detection enables static and dynamic desk-allocation of queues, supporting different ways to optimize processes and performance.

"70% of our total passengers are using our check-in facilities. An operations dashboard as enabled based on the Xovis data allows us to work with a reliable overall data strategy."

Julia Burney
IT Service Transition Manager
at Gatwick Airport

BENEFITS

LGW counts on Xovis to keep track of the performance of various stakeholders, gathering quality data and meeting the high service expectations:

- LGW manages to fulfill the Airline Service Standards that passengers have to queue less than 30 minutes for 95% of the time.
- Passenger experience at security has been rated top by UK government.
- LGW app that integrates all the gathered data has been awarded repeatedly.
- Xovis data enables the comparison and evaluation of operations such as self-service bag drop and common use set-up.
- Stakeholders receive monthly public reports and are alarmed in real-time if waiting time thresholds are exceeded.

XOVIS

CASE STUDY

Big Data helps reduce waiting times

Serving more than 43 million passengers annually, London's Gatwick Airport (LGW) is not only the second busiest airport in the UK, but also home to more than 60 airlines and the world's most efficient single runway airport. Facing the challenge of maintaining existing assets and meeting high service standards while accommodating continuous growth, LGW monitors people flows, bags and aircraft movements as part of a Big Data strategy. LGW commits to providing the best possible passenger experience and satisfaction.

STAY IN THE KNOW

In order to live up to the high expectations of passengers, partners and regulators, LGW counts on Xovis 3D Sensors and software solutions to measure KPIs such as waiting times and passenger throughput. The gathered data is included in regular reports on performance and traffic figures for all the involved stakeholders. Roughly 250 Xovis 3D Sensors are deployed in various sites at both LGW terminals and cover 15'454 m2, which is equal to 2.2 football fields. For instance, the coverage of the Xovis 3D Sensors comprises nine check-in zones in the South Terminal and six check-in zones in the North Terminal. Each terminal accommodates around 150 check-in desks, where passengers may queue up and waiting times are a crucial determinant of passenger experience and satisfaction. The North Terminal also includes

Xovis' automated queue detection allocates a queue to a check-in desk and excludes passerbies to measure the waiting time only for passengers.

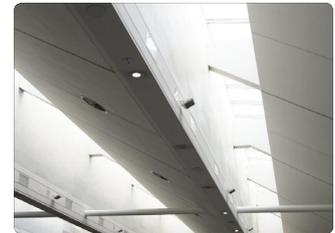
the EasyJet Bag Drop Kiosk, the world's largest self-service bag drop, where the waiting time measured with the Xovis technology is displayed on screens, keeping 20 million passengers in the know every year.

ACCURATE DATA IN DYNAMIC AREAS

In often dynamic and unstructured check-in areas, different modes of Xovis' automated queue detection enable the allocation of queues to check-in desks. Measuring waiting times for 60 different airlines in 15 different zones and two terminals, queues are mostly allocated dynamically to the check-in desks. The algorithm of the automated queue detection manages to detect queues based on approaching patterns and excludes passerbies, meeters and greeters from the calculation to measure the waiting time only for passengers.

SERVICE LEVEL STANDARDS MET

In case waiting time thresholds are exceeded, the Xovis system sends out real-time alarms. The monthly reports based on Xovis data are shared with all the involved parties. That makes it possible to keep track of the performances of various stakeholders and to optimize processes. Among other things, Gatwick Airport manages to meet the Airline Service Standards that passengers have to queue less than 30 minutes for 95% of the time.



Xovis 3D sensors at check-in

Overall	Yesterday	Today
Gatwick	50%	75%
Airlines		
Aer Lingus	83%	100%
Emirates	100%	100%
Monarch	85%	100%
British Airways	70%	90%
Thomson	71%	80%
Thomas Cook	100%	75%
easyJet	54%	74%
Virgin Atlantic	86%	71%
Norwegian	97%	61%

LGW's awarded Community App with integrated Xovis data

CASE STUDY

How does it work?

Long queues make airports look bad and frustrate passengers. Xovis provides airports with a powerful tool to move passengers more smoothly through their facilities, optimize staff and infrastructure planning and ultimately increase customer satisfaction. The combination of Xovis 3D Sensors and software solutions helps improve efficiency all over the airport and prepares the ground for innovative business models.

Counting and tracking passengers anonymously, the Xovis system combines 3D sensors with software solutions to measure the targeted KPIs in real-time. A broad portfolio of Xovis 3D Sensors with ultra-wide viewing angle accommodates the specific architectural conditions of any airport. Mounted on the ceiling, one sensor covers up to 100 m² or 1100 sq.ft. and can be mounted from 2.2 to 30 m or 7.5 to 130 ft. high. A high-resolution 3D image, often also referred to as stereo image, of the covered/ recorded area is calculated up to 30 times per second, providing the basis on which every person that is entering the covered area is counted and tracked anonymously.

Based on the 3D images computed on the sensor, the software receives data streams from all the installed sensors, calculates and visualizes KPIs such as waiting times and passenger throughput on real-time dashboards. An unlimited number of sensors can be connected into a Multisensor

to continuously track passengers through large areas anonymously. The system also features an automated queue detection that measures waiting times only for passengers excluding staff, meeters and greeters even in unstructured, dynamic multi-queue areas.

Passengers are recognized individually even if they are standing shoulder to shoulder. Constant sample rates of 98% are guaranteed, meaning that 98% of passengers in the covered area are registered. The 3D stereo vision technology does not depend on signal-emitting devices and is highly robust against all kinds of external influences such as shadows, light changes and heat emissions.

Power over Ethernet (PoE), combining data connection with power in one cable, and a Mean Time Between Failure (MTBF) of 25 years simplify installation/maintenance and keep total cost of operation low. Implementing FPGA technology, the image processing is performed on the sensor. No video stream leaves the sensors and data privacy is guaranteed. Only a constant stream of moving dots, representing the counted passengers, is sent out. Only one server is needed to run the system with up to 600 sensors. The Xovis system can easily be integrated with other software solutions. For example, waiting times can be exported automatically from the system and displayed on screens at the airport or on the airport's mobile app.

According to the study "Rise to Challenge – The Risks and Opportunities of Digitization for Airports," from Roland Berger, a five-minute delay for 25 percent of passengers at the security checkpoint could induce a drop in retail sales of 2 to 3 percent. People that wait more, spend less.



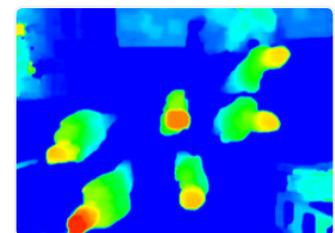
PC2R with WiFi-Module



PC3



Web and mobile clients of the software are also available



3D image computed by Xovis sensor indicating heights and distances by different colors

CASE STUDY

Technical Data

WORKING PRINCIPLE:	3D stereo vision / distance measurement
INSTALLATION ANGLE:	+/- 15° in x-axis +/- 5° in y-axis
OPERATION TEMPERATURE:	0°... 50 °C
WITH OUTDOOR HOUSING:	-20°... 50 °C
STORAGE TEMPERATURE:	-20°... 70 °C
AIR HUMIDITY:	20 ... 80%
CONNECTION:	RJ-45 Ethernet
POWER SUPPLY:	PoE Class 0 / (IEEE 802.3af)
POWER CONSUMPTION:	< 5W
REQUIRED ILLUMINATION:	min. 2 lux
SIZE (LxWxH):	PC2/ PC2R: 13.0 x 9.4 x 3.0 cm PC3: 33.0 x 6.1 x 4.0 cm PC3-0: 38.5 x 9.0 x 8.6 cm
WEIGHT:	PC2: 350 g/ PC2R: 250 g PC3: 600 g/ PC3-0: 1700g
MOUNTING HEIGHT:	PC2/ PC2R: up to 6 m PC3/ PC3-0: up to 20 m



Taxi Ranks



Duty-free



Check-in



Gates



People Movers



Baggage Reclaim



Terminal Entrances



Emmigration & Immigration



Security



Customs



Escalators



Transfer Security

ABOUT XOVIS

Swiss-based Xovis is the market leader in people flow monitoring. More than 65 international airports count on Xovis to measure numerous KPIs such as waiting times, process times and passenger throughput. Based on the gathered data airports optimize the planning of resources and the use of infrastructure. The combination of 3D sensors and software solutions stands out with unmatched accuracy, reliability and ease of use. The system includes a sophisticated data privacy concept and does not depend on signal emitting devices. Founded in 2008, Xovis has evolved from a three-man start-up to a high-tech company with more than 80 employees.