Connected Airport

LONDON HEATHROW TERMINAL 5

“Honeywell worked well with BAA and our other contractors during this very complex project and delivered it on schedule. Following the success in Terminal 5, we have now awarded Honeywell the contract for the fire and PA/VA system in the main building of Terminal 2 along with the lighting controls and building management systems.”

John Boyce, Fire Systems Manager, BAA
Issue

As a densely populated building comprised of large open spaces and smaller areas such as baggage control and back offices, Terminal 5 required a site-wide fire alarm system that could accommodate the different space usage, recognise landside and airside boundaries and facilitate a controlled evacuation in the event of an emergency.

In anticipation of regular changes to the network, particularly in retail areas or offices, quick and easy system modification was required along with the capability to record the changes for effective system validation.

Whilst passenger safety was a priority, so too was security and it was essential that a solution could be found which supported the constant segregation of arriving and departing passengers.

To maintain terminal-wide control, BAA also sought a PA/VA system that was capable of providing announcements only in areas where there had been an incident or where a call-to-action was needed. It also needed to communicate multiple gate paging announcements.

System Overview

Terminal 5 (T5) opened in March 2008 at a cost of £4.3 billion. The original terminal consisted of Concourse A (T5A), Concourse B (T5 B), a multi-storey car park, an energy centre, a track transit system and extensions to the Piccadilly Underground and Heathrow Express rail networks. Used exclusively by British Airways, T5 has capacity to accommodate up to 30 million passengers every year.

The complex features 60 aircraft stands including a number to cater for the new Airbus A380. The main terminal building, T5A, has four storeys above ground for arriving and departing passengers and five underground levels for baggage handling systems. The underground track transit system connects T5A to the two satellite terminal buildings – T5B and the later constructed T5C.

Covering 353,020 square metres, the terminal buildings house a total of 240 check-in facilities, 20 security lanes, 87 retail units and 25 food and drink outlets.

After many years of successfully completing projects in other terminal buildings, Honeywell Building Solutions (HBS) was originally appointed by BAA to design, develop, supply, install and commission an integrated fire alarm and PA/VA system for the T5 development.

In 2009, Carillion, BAA’s appointed principal contractor, selected Honeywell to expand the system into the new facility, T5C. Both customers sought an effective life safety solution that would serve the millions of passengers passing through the terminal every year and help to make Heathrow their airport of choice.

With the highest number of international passengers, Heathrow is one of the world’s busiest airports. Its owners, BAA, sought an integrated fire alarm and Public Address / Voice Alarm (PA/VA) system to cater for the millions of passengers to its newest terminal – Terminal 5. Honeywell Building Solutions designed, developed, supplied, installed and commissioned a solution that proved to be the largest networked fire control system in the world.
The Solution

Consisting of 517 Epsilon fire control panels, which were a new product development by Honeywell to meet the requirements of large and complex systems, the solution that Honeywell provided is the largest networked combined fire and PA/VA system in the world.

The system consists of GENT by Honeywell Epsilon fire control panels connected via a dedicated private gigabit fibre-optic network to the terminal’s Security Control Centre and the Forward Management Office. The network carries all the control and audio data to over 13,000 digitally addressable and fully monitored loudspeakers that are acoustically designed and located throughout T5A, B and C.

To configure the hundreds of control panels and facilitate fire control strategies, Honeywell developed innovative and patented technologies specifically for the project. Known as the Fire Alarm Cause and Effect Tool (FACET), this software is designed to simplify and assist the process of implementing and managing fire control strategies together with in-built self-checking and error reporting functionality. It also provides greater visibility of detection devices, or assets, to produce useful site-wide data, accessed via a web portal. Full asset visibility enables Heathrow staff to ensure that each device exists, is fully working, and that its performance is maintained. Additionally, the system ensures accurate up-to-date record drawings of the system configuration at all times.

In the event of an emergency, the system will automatically route and transmit clear, intelligible voice alarm messages to loudspeakers in the affected zones only. This is designed to aid quick and controlled evacuations when and where necessary. It also means that passengers who have been security checked remain segregated from non-checked passengers, ensuring that stringent security regulations are maintained throughout the process.
In Operation

FACET equips the airport operators with a valuable asset register with which to accurately record and monitor changes to the network. It also offers the flexibility to expand or modify the system to support a change in use of a particular area. Integration of the fire alarm system with T5’s PA/VA means that Heathrow benefits from a single, user-friendly system as opposed to two disparate systems.

The PA/VA delivers additional value through its capability to communicate non-emergency passenger announcements and live flight announcements via the same individually addressable speakers. The passenger experience is improved through the enhanced audio quality of the messaging.

The system also affords better control over the evacuation procedure by imparting targeted and intelligible announcements to the affected occupants to ensure they make a timely and safe escape.

Honeywell ensured that the objectives were met and that the largest networked fire control system in the world was delivered on time and with the seamless integration of T5C on completion – all without disruption to Heathrow’s day-to-day operations.