

case study



Centralized control of buildings for the Madrid-Barajas Airport in Spain

As a contractor of AENA Aeropuertos, Honeywell Building Solutions has provided its innovative solutions in the centralized control of buildings, improvements to facilities, greater comfort and safety for passengers, energy productivity and efficiency, and time cost savings.

Honeywell

THE CLIENT

The Madrid-Barajas Airport is operated by AENA Aeropuertos. It is an airport that combines history and modernity in its four terminals and holds fourth place in the ranking of European airports for the highest flow of passengers.

It is a true communications hub with an annual capacity for 70 million passengers that recorded a flow of 49.9 million passengers in 2010. It provides service to over 90 airlines, and provides coverage to 190 destinations all over the world.

- Terminal T-1 is exclusively for international air traffic.
- Terminal T-2 provides transport services to domestic passengers and to those passengers traveling to countries participating in the Schengen agreement. In 1980 when the remodeling works began on this terminal with the upcoming 1982 Football World Cup games in sight, Honeywell began its successful collaboration with the Madrid-Barajas Airport - nearly 31 years ago.
- Terminal T-3 (North Terminal) joins Madrid and Barcelona with the air bridge.
- Terminal T-4, for international flights, and its satellite building, T4s, for trans-ocean flights, are the most modern buildings in the entire complex. It has been internationally recognized with several awards, among which the "RIBA Stirling 2006" and "RIBA European Awards 2006", granted by the Royal Institute of British Architects, stand out. The "Aeropuerto Global 2011" award, granted by the Institute of Transport Management (ITM), which is also British, is also quite notable.

This project was completed in February 2006, after the expansion of the existing facilities to more than 750,000 m², creating an additional capacity for 35 million passengers per year and two new runways that can handle 120 flights an hour, which reinforces the importance of Madrid-Barajas as a global hub.

THE CHALLENGE

AENA Aeropuertos had a dilemma: How could its facilities, the comfort of its passengers and productivity be improved, while reducing its time costs at the same time? It wanted a solution that would be sustainable over time, not just a one-time improvement of its facilities. In addition, the requirements of current legislation had to be kept in mind, which mostly refer to the environment and therefore could not be left out. In fact, this became one of the main reasons behind the successive changes to the airport.

Its managers sought a centralized solution for the airport's facilities, with specific graphs and information in real time in order to solve each problem that might come up during the daily operation of the airport. To do so, it had to have the right number of maintenance staff with broad experience in this type of operation.

In Honeywell, it found a provider that gave it solutions to these challenges, with a reliable and extensive centralized building control system that would be incorporated in the Airport Management Center (CGA) of the airport with an experienced human team that was prepared to take on the necessities of the company throughout the years.

THE HONEYWELL SOLUTION

Honeywell's solution, based on similar facilities at other airports, concentrated on a single control platform for up to 7 of the most representative and critical installations managed at the CGA.

This design grants the airport managers a precise and complete view of the operations of all of their facilities, with real-time access to over 200,000 control points, and alarm histories, in a comfortable and intuitive environment that helps them to improve efficiency and productivity throughout the airport.

EBI integrated in the airport's CGA – 7 supervised systems

- Climate control
- Video docking guidance
- Electricity
- Fire detection
- Mechanical – Elevators
- Lighting
- Management of electricity consumption of users

CONTROLLED SYSTEMS

Climate control:

The climate control installation of the Airport is made up of over 100,000 points of control, between field equipment of all kinds (temperature probes, actuators, valves, etc.), controllers and schedules, and various pseudo points. These signals are brought together in the Honeywell EBI system, distributed between several of the 6 servers installed in the CGA.

Video docking guidance:

This system is based on digital video cameras that follow the movement of the airplanes while they dock at the gates. It automatically detects the airplane's profile and alerts the captain to adjust the necessary parameters for docking.

It is one of the biggest guidance systems in the world, with 103 units installed in Terminal T-4 that facilitate comfortable and safe docking of the airplanes for the docking managers.

Fire detection:

This installation is made up of over 50,000 points of control, between all types of detectors, sirens, emergency push-buttons, control and monitoring modules, and other equipment, connected to 42 fire switchboards: XLS1000, 12 XLS80e and 12 FS90.

Electricity and Lighting:

Aside from climate control panels, the Honeywell controllers provide service to about 35,000 points of electricity and lighting, distributed through several low voltage panels throughout the Airport.



Management of electricity consumption of users:

This system takes into account the electrical consumption of each of the airport users (stores, restaurants, etc.), measuring their use with electricity meters and centrally managing them from the CGA in order to later issue the corresponding bills, and to perform studies and analyses of consumption for future changes to the facilities if necessary.

BUSINESS BENEFITS

AENA Aeropuertos manages a safer, more comfortable, more energy-efficient and more productive airport.

Alex Navratil, Honeywell on-site supervisor, says: "Our client expects the best of its control facilities, both from the point of view of the product and of the quality of maintenance service offered. Honeywell has beaten its expectations, and that is why it has been a partner of the Airport for over 30 years, despite the crisis and the structural changes that the Airport has undergone during this time period"

Key points:

- Integral facility control system
- Measurement of the improvements in facility operations
- Centralized management system
- Competent and responsible execution of maintenance
- Real-time and historical reports
- Improvement of comfort and security
- Compliance with legislation
- Long-term investments

AENA Airports and Honeywell have successfully collaborated on the Madrid-Barajas Airport since 1980. During this time, Honeywell has carried out hundreds of improvements to those facilities, paying special attention to the airport's needs, which is a testament to the trust that the client has placed in this company. Today, Honeywell continues to contribute its experience with new initiatives and innovative solutions that will undoubtedly take this company to success in the coming years with one of the most important airports in the world, the Madrid-Barajas Airport.

*See attached for reference photographs
The following photographs show different spaces and views of the Madrid-Barajas Airport and the CGA (Airport Management Center), with some Honeywell maintenance personnel and several graphic screen outputs from the EBI.*

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