T.E.C. SYSTEMS INC.

CASE STUDY

BUILDING AUTOMATION CONTRACTORS

AirTrain JFK Terminal @ Jamaica Station

Optimizing Comfort For The Masses

The AirTrain to John F. Kennedy (JFK) International Airport by far was the largest construction project in the New York Metropolitan area in recent years. The AirTrain is a complimentary automated people-mover shuttle system that shuttles passengers between the Main Terminal and Satellite Buildings within JFK, and the Jamaica Transit Terminal where they can transfer to the Long Island Railroad (LIRR) or the Metropolitan Transportation Authority's (MTA's) network of subways and buses (a transit hub that serves more than a quarter of a million daily commuters).

In Queens, the existing historic Jamaica Station was enhanced to accommodate the AirTrain and create a new intermodal terminal and airport gateway; expansion and rehabilitation of the existing subway and LIRR station as well as a new glass-and-steel enclosed four-story facility stretching 400 ft long, 30 ft wide and 40 ft high. To keep with its state-of-the-art design, the new AirTrain terminal needed to be equipped with the latest in building-management technologies: a fully integrated system of essential functions that could be controlled remotely from the facility's automated building management system (BMS).

Provided by T.E.C. Systems, Inc., the system is a high-tech wonder that incorporates controls for safety and security, and environmental conditions into a single system that affords instant access and monitoring from personal computers located within the building itself and/or offsite monitoring centers. The integrated network of building-management controls includes an "intelligent" fire alarm and smoke detection system, and a self-regulating heating, ventilation, and air-conditioning (HVAC) system.

Getting Started

When planning for the building began, the Port Authority of New York and New Jersey, and officers of the MTA and LIRR (Collectively, Owner and Developer) wanted a system of cutting-edge technology that would offer the highest possible level of security and energy management.

Meeting Challenges

In order to meet these demands, T.E.C. Systems, as system integrator (responsible

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Project Team

Owner & Developer: The Port Authority of New York & New Jersey

Design Engineer: Lizardos Engineering Associates, P.C., NY

Mechanical, Electrical & Plumbing Engineer: Railworks, Inc., NY

Key Benefits

This new transportation center is a comfortable, efficient and ultra-modern facility, equipped with a sophisticated mechanical system. T.E.C. Systems applied advanced building controls concepts and equipment to help ensure the terminal will be a primary transportation hub for JFK. The BMS is a state-of-the-art technology, designed with a high level of innovation. This system interfaces and integrates the majority of electrically actuated end devices within the mechanical plant, assuring maximum flow of information for operations and management, and providing unprecedented levels of service, safety and comfort to the traveling public. This, in turn, will help bring more tourists and business to JFK.

for integration, for the design, installation, and startup), implemented an efficient building management system based on Honeywell technology to provide temperature, fire and smoke, and security control in the office areas, corridors, and pubic spaces. This BMS is a computer-controlled system linked to all mechanical equipment within the heating and ventilation plant, which features all new equipment: Chillers, Boilers, Air Handling Units (AHU's), Air Conditioning Units (ACU's) Variable Air Volume Units (VAV's), etc. The Honeywell BMS is an interoperable network with open protocol for all controllers used for direct digital control (DDC) of the HVAC systems. This setup optimizes the station for easy seamless integration of upgrades and/or expansions for many years to come. The automation system also has two Honeywell SymmetrE™ front end PC workstations for the engineering and maintenance staff. These workstations were connected via a standard Windows XP PC network, and serves as alarm handling stations for various equipment safety and system performance alarms. They are also used for HVAC service troubleshooting, data logging, executive reports, CO2 monitoring, and the monitoring of power consumption of all HVAC fan motors for energy usage reports and allow the facility engineers to perform statistical energy analysis of the total facility.

The Honeywell SymmetrE™ BMS is a scalable, open system that provides the tools to balance the building's occupant needs, operational issues and budget pressures. In addition to the traditional interface with Honeywell EXCEL® 5000 controllers, SymmetrE™ includes open industry interfaces demanded by the marketplace today such as a direct LonWorks interface, BACnet client and server capabilities, Modbus, OLE for Process Controls (OPC), and Advanced Dynamic Data Exchange (AdvanceDDE).

The Honeywell DDC controllers will control the variable flow chilled water system to track the rapidly changing cooling loads throughout the facility at the minimum energy cost. The BMS will have an imbedded chiller plant optimization program to dynamically manage the five new Multistack modular liquid chillers and the tower system to minimize energy consumption of the chiller plant at all outdoor conditions and space demands. Seamless communications takes place between the controllers and the Multistack modules via interface at the Chiller integration panel. The Honeywell LonWorks based processors manages the facility automation network to fully integrate information from VAV and AHU controllers, multi-zone AHU's, chiller systems, tower heat exchangers, and the five new Benchmark Hydronic heating boilers and pumps.

Construction Innovations

In addition to its emergency functions, the system provides a high level of convenience and cost savings for maintaining everyday building needs. Using the system's dedicated software, authorized personnel are able to modify safety and environmental controls remotely as needed. T.E.C. Systems also offers maintenance services for all the facility's mechanical and electronic control systems. This integration also supports the business goals of the Port Authority of New York and New Jersey of providing an efficient, cost effective operation of the AirTrain. As both a primary node on the Jamaica Transit Hub, and as the precursor to the next generation of travel to and from the airport, The AirTrain Terminal demonstrates advanced airport technologies and is a model for future building management solutions for the industry.

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