T.E.C. NEWS QUARTERLY

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The Masterpiece That Is 300 Madison Avenue

A Distinctive Building For A Distinctive Address

A wise man once said, "Quality is no accident. It is deliberate, planned, measurable, and achievable only through the conscious efforts of all involved." While dynamic, fluid solutions become an opportunity when such principles are employed, it's clearly the reality for T.E.C. Systems Inc. in its capacity as the building automation systems (BAS) integrator for the 38-story 300 Madison Avenue development project.

Located in Midtown Manhattan, 300 Madison Avenue consists of more than 1.2 million square-feet of office, trading floor, and retail space. The facility is centrally located on the corners of Madison Avenue and 42nd and 41st Streets. At 35 above-grade stories, the tower will include 25 floors of office space atop an eight-story base that will feature ground-floor retail space and trading floors. The base sits above two basement levels which offer subway connections, retail, office, and backhouse components. Property development is being done by Brookfield Properties Corporation. When complete, the Toronto, Ontario based Canadian Imperial Bank of Commerce (CIBC) will occupy 35,000 square-meters of the total 111,500 square-meters in the Skidmore, Owings &

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Inside this issue:

We specialize in:

- HVAC SYSTEM CONTROLS
- OPEN/INTEROPERABLE TECHNOLOGY
- SYSTEMS INTEGRATION
- FIRE/SMOKE CONTROLS

T.E.C. SYSTEMS INC.

What's New?

T.E.C. Systems To Help Build New York City's First LEED Designated Project - T.E.C. Systems, Inc., via a contract from Turner Construction, has been selected as the Controls Integrator for the new Hearst Communications building in New York City. Located at the corner of 57th Street and 8th Avenue, the project is a major addition to the existing Hearst building and is intended to consolidate the company's various magazine publishing enterprises under a single roof. T.E.C. Systems will provide a Honeywell SymmetrE™ Building Management System (BMS) with centralized monitoring and control of the mechanical and electrical systems that will serve the 42-story stainless steel and glass tower. Complementary, the lighting and fire alarm systems will also be integrated into the BMS. In its effort to introduce a truly 21st Century headquarters to New York City, The Hearst Corporation has set as its goal the attainment of LEED certification (or Leadership in Energy and Environmental Design) from the U.S. Green Building Council. LEED is a guideline for combining environmental stewardship and life cycle cost benefits of investing in good building design. Certification distinguishes buildings that meet the highest performance standards through environmentally conscious design, energy efficiency, resource conservation and dedication to indoor air quality. Whether the project will meet the green building criteria cannot be determined until the 850,000-square-foot, $500 million tower is completed in June 2006. Meanwhile, what has already been established is that the project is eligible to receive tax breaks under New York State's Green Building Tax Credit program. Similar to the LEED initiative, the New York State program promotes energy efficiency and environmental practices that can be easily incorporated into building design and construction. T.E.C. Systems is a member of the USGBC and supports the adoption of LEED as the building standard for organizations. For additional information on "green buildings," see page 6.

ASHRAE Winter Meeting & AHR Expo
January 24-28, 2004
Anaheim, California
http://www.ashrae.org
http://www.ahrexpo.com

Congratulations! Ron Herrmann - of T.E.C. Systems, on being certified as a LEED-accredited professional. □

2003 New York Construction News Award
Office Project of the Year - 300 Madison Avenue

T.E.C. Systems has been honored as the "Best of 2003 Award of Merit" recipient by the New York Construction News for its work in its capacity as the building automation systems (BAS) integrator for the 300 Madison Avenue development project in New York City. The newly built $300 million office tower is the latest skyscraper to complement the Manhattan skyline. Developed and owned by Brookfield Properties Corporation, the facility has a space inventory of 38 floors totaling 1.2 million square-feet. T.E.C. Systems worked as part of the Turner Construction team to bring the project to completion. To complement the building's bold visual design, the company supplemented the mechanical systems with a comprehensive, flexible, and integrated Honeywell Building Management System. The high-technology and high-efficiency control parameters inherent to the Honeywell platform will allow for the maximization of plant operations, occupant comfort, and utility savings.

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Merrill-designed tower and gathers some of the bank's New York City activities under one roof instead of being separated in different locations across Manhattan today. There are talks of one of accounting's Big Four negotiating for 74,000 square-meters of space within the building.

Anatomy Of A Masterpiece

To top the abundance of structural amenities, and supplementary services, Brookfield Properties set out to make certain of tenant productivity by ensuring the comfort and quality of the office environment while minimizing operational and energy costs. Its strategy included providing Heating, Ventilation and Air-Conditioning (HVAC) and other environmental controls customizable to tenant needs. To that end, T.E.C. Systems was tasked with the design, and installation of a comprehensive, state-of-the-art facility management system to integrate two floors of mechanical equipment, and an accumulation of ancillary components strategically implanted facility-wide. Working with the MEP Engineer (Jaros Baum & Bolles), a solution was resolved to provide a Honeywell EXCEL® 5000 Building Management System, utilizing the Excel-500 family of controls for major equipment rooms and the Excel-10 family of LonWorks based Open-System & Interoperable Controllers for terminal unit controls.

Heating & Cooling

The heating and cooling plants features a network of chillers, boilers, Air Handling Units (AHU's), Constant Air Volume (CAV's) Units, Cooling Towers, Sand Filters, Fan Powered Boxes, and a host of complementary equipment from a variety of manufacturers.

Hot water will be generated by shell and tube heat exchangers. A pressure reducing station will produce low pressure steam. Hot water pumps will circulate hot water through the heat exchangers and perimeter hot water risers. Hot water or low pressure steam will also serve heating coils located in various heating and ventilating air handling units, unit heaters and entrance heaters. The air conditioning systems are all-air variable air volume type. The fan systems are capable of varying from 100% of design air flow down to 20% of design air flow, utilizing variable speed fan motor drives.

T.E.C. Systems utilized independent C-Bus communication risers to support the backbone of the entire system. One C-Bus is dedicated to basic temperature controls communications requirements of the major HVAC equipment. Two additional C-Buses will support future tenant fan powered boxes, VAV boxes and package unit controllers. The balance, are dedicated smoke control communications buses, which provides the system with a greater speed of response to smoke control issues. On each of the floors requiring future terminal unit controls, both VAV and packaged terminal units are supported via a LonWorks interoperable communications bus that is integrated into the overall Honeywell communications system.

The Excel-500 family of stand-alone DDC controllers supports the mechanical equipment rooms. Each individual system was provided with its' own dedicated stand-alone controller, and enabled to communicate over a C-Bus providing information to the balance of the building as well as the operator terminals.

Where required, the Excel-10 family of stand-alone, LonWorks based controllers were provided to support the addition of future fan powered boxes, CAV boxes, VAV boxes and package units. The utilization of LonWorks enabled devices allows the building to be more flexible in their future choice of unitary controllers.

Smoke Control & Fan/Fire Shutdown

A dedicated C-Bus riser was designed to handle communications between the Smoke Control Panel located on the lobby level and the floor control panels. The floor panels include individual

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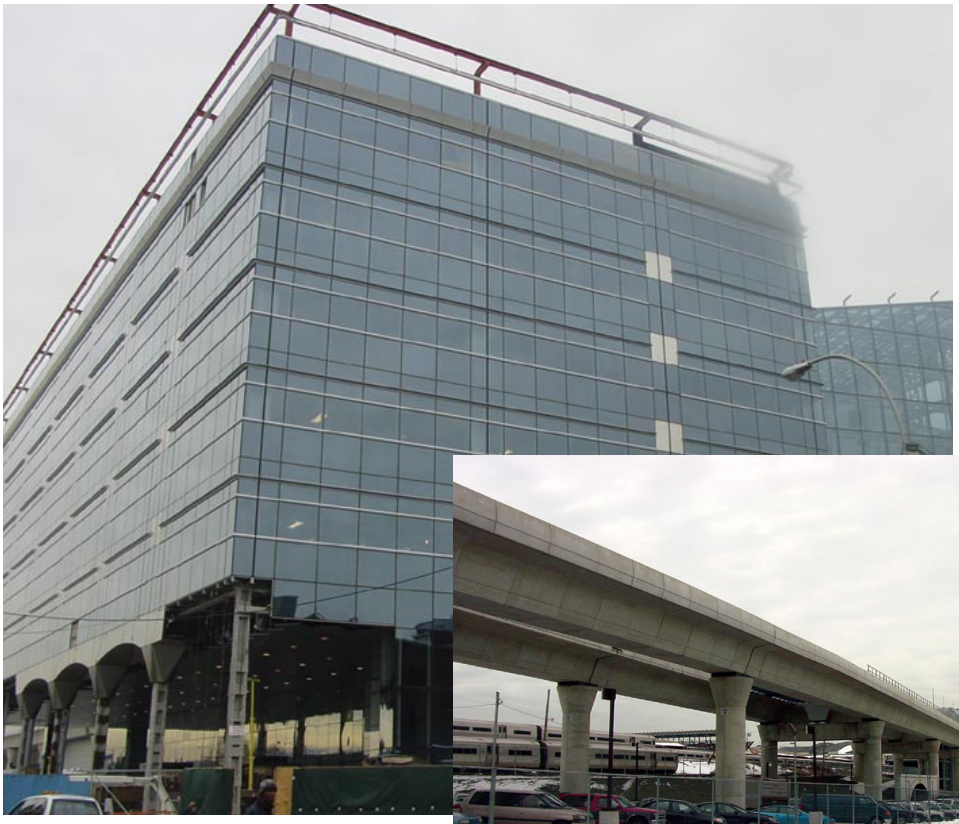
AirTrain Ready To Soar

New Terminal Incorporates State-Of-The-Art Building Management System

The $1.9-billion AirTrain to John F. Kennedy (JFK) International Airport is a key component of the largest current U.S. airport development, and by far the largest construction project in the New York Metropolitan area in recent years. The AirTrain will be a complimentary automated people-mover shuttle system that shuttles passengers between the Main Terminal and Satellite Buildings within JFK, and the Jamaica Transit Station has been 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. In keeping with its state-of-the-art design, the new AirTrain terminal will be equipped with the latest in building-management technologies: a fully integrated system of essential functions that can be controlled remotely from the facility's automated building management system (BMS).



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). With current transport times to and from the airport put at around two hours, due to heavy traffic, the award-winning rail system will dramatically cut the chronic difficulty of getting to and from JFK.

In Queens, the existing historic Jamaica

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 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 will be an interoperable network with open protocol for all controllers used for direct digital control (DDC) of the HVAC systems. This setup will equip the station for easy seamless integration of upgrades and/or expansions for many years to come.

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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 will serve as alarm handling stations for various equipment safety and system performance alarms. They will also be used for HVAC service troubleshooting, data logging, executive reports, CO2 monitoring, and monitor 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 will take place between the controllers and the Multistack modules via interface at the Chiller integration panel. The Honeywell LonWorks based processors will manage 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

When complete, this new transportation center will be 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 system 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.

In addition to its emergency functions, the system will provide a high level of convenience and cost savings for maintaining everyday building needs. Using the system's dedicated software, authorized personnel will be able to modify safety and environmental controls remotely as needed. T.E.C. Systems will also offer 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 will demonstrate advanced airport technologies and be a model for future building management solutions for the industry. □

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floor control panels for operation of the supply and return fire smoke isolation dampers from those panels. Additionally, T.E.C. Systems provided separate outputs from the DDC controllers to allow fan shutdown after receipt of the required input from the life safety central alarm panel located on the lobby level.

Bringing It All Together

The entire HVAC system is centrally monitored and controlled. This ensures that the comfort level in the premises is maintained at all times. The front-end is based on Honeywell's highly adaptable and scalable SymmetrE™ operator interface architecture. SymmetrE™ is an easy to use, graphics-oriented operator interface. It is designed to meet the sophisticated comfort, monitoring and control needs of large buildings and their owners. At 300 Madison Avenue the operator interface provides global control, serving as a communication link between the operator and the building management panels. T.E.C. Systems furnished the facility with two stationary color graphic operator terminals as well as a portable laptop to allow local capabilities at each control panel.

The choice of the Honeywell building technology was made because it offered many benefits such as multi-vendor capabilities, openness and interoperability. Through the integration of components from Honeywell's line of EXCEL® 5000 products, T.E.C. Systems created an efficient building technology concept, providing superior control of the various mechanical systems in the facility and offering the highest level of comfort, reliability, and cost benefits. Honeywell's EXCEL® 5000 system has proven to be the necessary "get smarter" tool that reconciles the paradox of increasing demand for more productive buildings, and increased pressure to reduce costs. □

In The Spotlight

Green Buildings, The New Standard!

"Green" or "Sustainable" buildings use key resources like energy, water, materials, and land much more efficiently than buildings that are simply built to code. They also create healthier work, learning, and living environments, with more natural light and cleaner air, and contribute to improved occupant health, comfort, and productivity. Sustainable buildings are cost-effective, saving taxpayer dollars by reducing operations and maintenance costs, as well as by lowering utility bills. Over the last decade, the green building movement has gained remarkable momentum. The United States Green Building Council (USGBC), a national non-profit organization, has grown considerably in membership. The USGBC's Leadership in Energy and Environmental Design (LEED) rating system has been widely embraced both nationally and internationally as the green building design standard. Public and private sector entities, including the cities of New York, San Francisco, San Diego, Los Angeles, Seattle, and Portland; the federal General Services Administration; the Department of the Navy; and the states of Oregon, and Maryland have all adopted green building policies and clean energy standards. In addition, major corporate entities, including IBM, Phillip Merrill, Steelcase, Herman Miller, Interface, PNC Financial Services, Southern California Gas Company, Toyota, Honda, and Ford Motor Company, have constructed green buildings. Recognizing the tremendous opportunity for New York state government to provide leadership in the area of exemplary building design and construction methods, several years ago Governor Pataki issued an Executive Order that address the siting and building of state facilities: Executive Order No. 111 establishes the Governor's sustainable building goal: to site, design, deconstruct, construct, renovate, operate, and maintain state buildings that are models of energy, water, and materials efficiency; while providing healthy, productive and comfortable indoor environments and long-term benefits to New Yorkers. The objectives are to implement the sustainable building goal in a cost effective manner, use extended life cycle costing, and adopt an integrated systems approach.

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