

CASE STUDY

BUILDING AUTOMATION CONTRACTORS

Federal Aviation Administration

The new eastern region headquarters for the Federal Aviation Administration, located adjacent to Kennedy Airport in Queens, New York, is a state-of-the-art facility. With Heating, Ventilation, and Air Conditioning (HVAC) systems serving multiple LAN and telecommunication network rooms, strategic computers, switch gear

centers, and areas with names such as Command Center and Crisis Center—the critical nature of the network that controls this system is clear.

Edward J. Minskoff Equities, owner and developer of the FAA facility in New York

selected the LonWorks platform, developed by Echelon®, as the network control standard because significant benefits include time and cost savings on installation and network maintenance.

“This project has it all, and LonWorks ties it all together,” states Ron Herrmann, project manager for T.E.C. Systems Inc., the integration contractor based in Long Island City, New York. “The FAA building is a true multi-vendor, open protocol, interoperable facilities management system.”

Building a Total Solution with LonWorks

The spine of the communication network is a LonWorks TP/XF-1250 high-speed twisted pair backbone that utilizes Echelon LonPoint™ routers. The building’s multistory physical configuration is ideal for this high-speed daisy-chain backbone and provides floor-by-floor network segmentation. The network communication backbone is directly

connected to two user workstations through Echelon PCLTA cards, allowing for maximum throughput and flexible network management capability.

Nine Echelon twisted pair LPR-12 routers provide TP/XF-1250 (1.25Mb) bus topology to TP/FT-10 (78Kb) free topology media conversion and manage communication channel traffic for each floor including the major mechanical systems. The TP/FT-10 transceiver is used exclusively with all LonWorks field devices due to its dependable network design and ease of installation. One Echelon PSG/2 Programmable Serial Gateway rounds out the communication backbone and provides communication translation to and from the McQuay package AC equipment via McQuay’s Open Protocol Master.

Two Pentium PC workstations, one located at the lobby security desk and the other in the Building Management Office, provide operator access to the system. These Windows NT workstations are setup in a client/server configuration and are networked to each other via the buildings’ Ethernet network. Each station is outfitted with an Echelon PCLTA network interface card that includes a TP/XF-1250 transceiver, for direct access to the twisted pair building control system backbone. WonderWare In-Touch software running with Echelon’s LNS™DDE server provides the HMI (Human Machine Interface) dynamic graphics package that includes network performance and data, along with alarming, trending and scheduling capabilities.

The intelligent nodes placed at various equipment locations provide a variety of data monitoring and control for the user. Along with required items such as equipment start/stop control, status, speed control, and motor current, the LonWorks nodes also provide

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Project Specs:

Owner and Developer:

Edward J. Minskoff Equities

Engineer:

Cosentini Associates, Robert Derector Associates

Mechanical Contractor:

Anron Air System

General Contractor:

Seacrest, Inc. (Base)
IDI Construction, Inc. (tenant)

Key benefits:

- LonWorks network achieves more data for less cost with multiple point intelligent devices and flat distributed network architecture.
- System openness increases choices from multiple LonWorks vendors for expansion.
- Fewer components yield efficient trouble shooting and maintenance from centralized data location.

T.E.C. Systems Inc. is a full service, New York based, automation controls contractor, specializing in the design and implementation of computerized Building Automation Systems.

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additional data such as run hours, motor RPM, alarm status and total energy usage. "Not only are the five points required by the spec handled through a single connection, but an additional 10 'value added' data points become available to the customer at no additional charge," Herrmann confirms.

Diverse Components Combine for Impressive Network

"Honeywell and Johnson are the two largest names in controls industry," Herrmann noted, "and the fact that components from both of them reside on a common network, along with a number of other companies, is very impressive."

The LonWorks Advantage: More Control, Less Wiring

The building control network consists of 318 installed nodes that include 366 I/O points hardwired to node devices. This capability is due to the distributed intelligence architecture of LonWorks networks—putting the control intelligence where it happens. For example, a single variable frequency drive (VFD) device provides over 15 data points to the network alone including motor speed, amps, volts, and power factor. In conventional proprietary systems each field data point is typically hardwired to central control panels. To achieve the same number of points as the LonWorks system would require close to 1600 field points along with the associated home wiring runs and network connections. The FAA LonWorks building network is wired with 684 connections that retrieves almost 1600 points of data on a single twisted pair wire communication network resulting in substantial savings in installation wiring costs.

"Fewer components to buy and install, equals a reduced chance of failure, fewer connections to check and reduced time and cost for the installation and network maintenance," Herrmann continues. "LonWorks intelligent devices are much easier to troubleshoot because of data brought to the user at one location."

"System openness is also an important benefit from LonWorks," Herrmann adds. "When a system comes from a single manufacturer, any expansion must be made with the same equipment. In open system, however, you can buy the best component to fit a certain application. You can use Johnson, Honeywell, Echelon—the best components on the market."*



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