

Johnson Controls' Towering INTEGRATION



INTEGRATED COMMERCIAL INSTALLATION WINNER

AT A GLANCE

Company Name: Johnson Controls

Location: Hillside, Ill.

Years in Business: 24 years

Number of Employees: 47 (at Hillside location)

Company Info: Johnson Controls' Hillside location is one of five company offices in the Illinois region. The company covers 24 regions throughout North America. The Hillside branch was originally an independent company formed in 1979, called Electronic Systems USA. Specializing in third-party systems, it was acquired by Johnson Controls in January 2000.

The effects of 9/11 continue to impact businesses across the country, as security upgrades are being done in buildings large and small. But right after the terrorist attacks, major landmark locations like the Sears Tower, the tallest building in the United States for 30 years, had to be additionally secured as soon as possible.

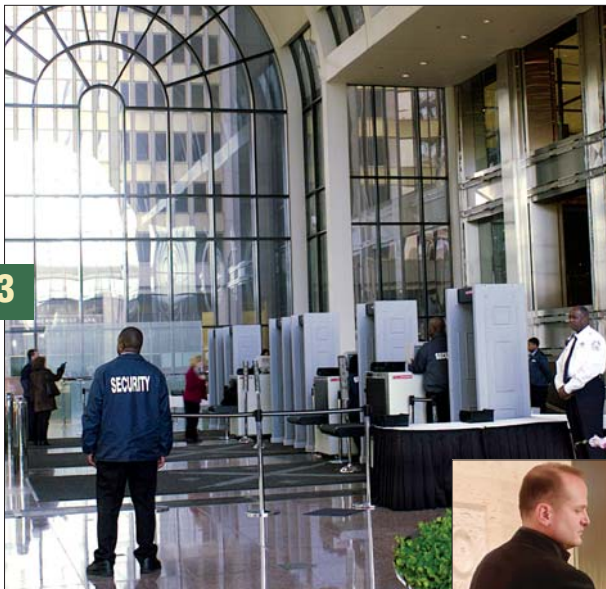
Johnson Controls' Hillside, Ill., office was awarded the job of installing security hardware, and it won the bid (out of seven vendors) for the access control upgrade. Johnson Controls upgraded the building's access control system with a Web-based visitor registration system with ID badging, and added CCTV cameras to its digital recording system. It also installed optical portal units, X-ray metal detectors and protective barrier systems.

This large-scale project earned the integrator *Security Sales & Integrations'* Sales and Marketing (SAMMYs) Awards' grand prize of Integrated Commercial Installation of the Year for 2003.

After 9/11, Tower Is Considered a Major Target

A day after the attacks, building officials and security consultants began a comprehensive security assessment. They ultimately decided to upgrade the building's access control system and install different forms of security hardware.

The goal of the project was to secure the core of the building and sustain a safe and secure work environment for the



1. Dozens of cameras were integrated with the Sears Tower's digital CCTV system, which monitors many of the building's 110 stories, including the sky lobby floors.

2. With 160 executive spaces in 10 floors, the Sears Tower stands 1,450-feet high. Certain floors have an average size of 50,000-square feet, while others measure 39,000-square feet; 29,000-square feet; and 11,000-square feet.

3. Placing X-ray metal detectors at the Sears Tower's main entrance was a priority after the 9/11 attacks, but some of that equipment arrived late. "We lost a couple of X-ray machines to the Pentagon," says Mark Eggerding of Johnson Controls. "You don't argue with the Pentagon."

4. Individuals must first run their access control card over the turnstile before optical sensors let them know where they are allowed to go throughout the building.

5. Building security officials say the optical turnstiles from Automatic Control Systems match the building's decor and look like they had been there for years.

2003 COMMERCIAL INSTALLATION OF THE YEAR

tenants. "It was an issue of population control," says Mark Eggerding, senior technical solutions representative for Johnson Controls. The integrator has been providing the Sears Tower all of its building automation and security needs since 1983.

Carlos Villarreal of Trizec Properties, director of security for the Sears Tower, says the building population alone is approximately 10,200, with up to 20,000 people entering the skyscraper on a daily basis. "We didn't have any threats on the building, but it was considered to be a potential target," says Villarreal.

During the bidding process, Villarreal says Trizec received proposals from six other providers, but Johnson Controls came in with a good design and competitive pricing. More importantly, he adds, "they said they could deliver in the timeframe we needed to complete the access control upgrade."

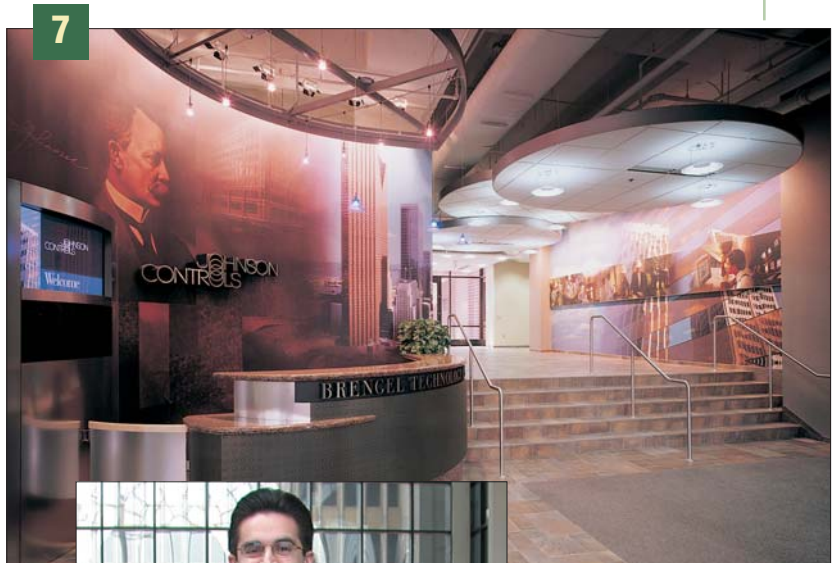
Company Begins With Hardware to Enhance Population Control

The first phase of the project began in December 2001. It consisted of installing X-ray metal detectors and optical portals on the first floor in the lobby area. "While doing this, the building still had 20,000 people coming into the building," Eggerding says. "So we had to keep the existing access control system running while doing flow control pathways to provide the least amount of distribution to the place as possible."

With six to seven installers on the job, Johnson Controls started with the optical turnstiles in 34 locations throughout the lobby area. The installation crew anchored the turnstiles to the floor and ran wire to integrate them into the access control system, which was to be upgraded later to meet a June 3, 2002, deadline.

The turnstiles are made of stainless steel to match the building's décor, and have glass doors. People who pass through the turnstiles must first present their access control card. Optical sensors then determine where each person is allowed to go.

The next step was to install the X-ray equipment, which was integrated with the CCTV system. This initial



6. A Johnson Controls technician who helped install the security hardware equipment checks one of the building's turnstiles at the front entrance.

7. Johnson Controls' Hillside, Ill., location has been servicing the Sears Tower since 1983. It has a team of technicians that maintains the tower's security system on a daily basis.

8. Carlos Villarreal, security director for the Sears Tower (who works for Trizec Properties), says an integral part of the entire security installation was getting the turnstiles integrated with the card access system.

process posed a challenge for Johnson Controls, Eggerding says, because of the conduits in the floor. The crew built additional glass walls for service door applications.

New System Backbone Enables Better Integration Flexibility

Once the X-ray equipment portion had been completed, Johnson Controls installed a new network backbone with fiber optics and hardwiring for door and elevator control. Door hardware was added to many locations on the first floor — as well as other floors — but the company kept the hardware that had already been installed on some doors.

“This new system provides more flexibility for the elevators,” Eggerding says.

Next up was installing additional CCTV cameras. Johnson Controls added dozens of cameras on the first floor — consisting of a combination of high-definition black and white (B&W) cameras and some color cameras.

The cameras were linked to the Sears Tower’s CCTV system, made up of 10 digital video recorders networked together in the building’s main control room. “The integrated system allows the cameras to have direct integration with the access control portion. It can give signals back to the CCTV system to change location or to begin recording,” explains Eggerding.

Building Floor Access Is Controlled Through Elevators

After June 3, Johnson Controls worked its way up to other floors, mounting new equipment on top of elevators for access. This was an intricate process since each floor would act as a door location, Eggerding says. CCTV cameras were also installed on certain floors, such as the building’s sky lobby floors, which is a transfer floor to the elevators.

Johnson Controls also installed outdoor barrier protection, but Eggerding and Villarreal could not elaborate further, citing security reasons.

Crew Transfers Information of 20K Tenants Into New Access System

Johnson Controls worked on the access control system upgrade in March 2002, right after the integrator

Sears Tower Equipment List

Brand	Description
American Dynamics	CCTV cameras
Automatic Control Systems	Optical turnstiles
Control Screening	Metal detectors X-ray machines
Dorado Products Inc.	Access control readers used in the pedestals
HID Corp.	Proximity readers for the optical turnstiles and other areas in the building
Intellex by Tyco Electronics Group	CCTV digital recording system
Johnson Controls	Camera and software for the guest badging system
Panasonic	Monitors
Pelco	Video motion detection
Seico Security Systems	Fiber-optic cables, transmitters and receivers

Note:The quantity of each piece of equipment has been omitted for security reasons.

was awarded the bid. It created a new access control database and transferred all of the information from the previous system.

The integrator worked with the building’s operation and security team on this portion. “We had 24,000 people who had their pictures taken, so we had to find a way to convert those people into the new system without having to take pictures again,” Eggerding says. The daunting task was done in three months, making the June 3 deadline.

The fire portion of the security system was not worked on much, Eggerding says, only that it was integrated with what Johnson Controls had installed. The work consisted of hardwiring the smoke, heat and other fire protection outputs to the access control panels (mandated by code), then wiring them to the optical portals. “We monitor more than 30,000 points on the fire portion alone,” says Eggerding.

Providing Service to Sears Tower Is an Ongoing Process

Throughout this process, Villarreal, Eggerding and others held weekly

meetings and communicated with each other about three times per week. “We would meet with Mark , electricians and carpenters and go over blueprints,” Villarreal says. “Then we would repeat the process and go forward.”

It’s been more than a year since Johnson Controls installed this equipment. Eggerding says the company continues to upgrade and install security equipment to the complex system. “We’re adding a new addressable PA system throughout the building. We’re continuously upgrading to keep current with codes and with the building’s changing needs.”

So far, it has cost Trizec Properties millions for the project — and counting. Eggerding says, “We have an obligation to the building. It’s a partnership with Trizec, so we’re very cognizant of cost and service.”

Villarreal, who has been security director of the Sears Tower since 1997, says Trizec is satisfied with the work and service Johnson Controls has provided. “We’re fortunate to have technicians on-site and have a phone tree system so we can have someone available on off-hours,” Villarreal affirms.