

Project Profile

Exempla Healthcare: A 17-Year Partnership with Andover Controls



Exempla Healthcare
Denver, Colorado

Amidst soaring healthcare costs and constant innovation, Exempla Healthcare of Colorado faces the dual challenges of maintaining excellent medical services and controlling expenses. While building automation plays a critical role in creating an optimal environment, it is also an opportunity to provide new resources from cost savings. For more than 17 years, Andover Controls has been instrumental in helping Exempla's facilities dramatically reduce costs and satisfy customers. Maintenance personnel are dedicated to the Andover Controls system and have benefited from three generations of its products. With the latest upgrades and expansions, they continue to realize new efficiencies and capabilities.

Exempla's Mission and Challenges

Exempla is a quality, low-cost provider of healthcare services from standard inpatient to wellness education and primary physician care. Lutheran Medical Center in Wheat Ridge, St. Joseph's Hospital in Denver, the Colorado Lutheran Home, West Pines, and several other facilities make up the principal care centers. Lutheran Medical Center (LMC) began as "The Evangelical Lutheran Sanitarium," which was started in 1905 to treat tuberculosis. Today, LMC serves the Denver metro area with a total of 489 beds and over 10 buildings, and was voted one of the top 100 hospitals in the Nation. This Exempla facility has the most extensive and comprehensive array of Andover products and BAS integration of any campus. Exempla was formed in 1997 through the merger of LMC and St. Joseph's Hospital.

In addition to delivering diverse high-quality, affordable healthcare, Exempla has several environmental and maintenance needs, says Rick Kinney, Technical Coordinator, Plant Utilities for Exempla Healthcare:

- Provide temperature, humidity, and circulation control.
- Enable customized environmental control for specific areas.
- Simplify control systems.
- Reduce response time.
- Reduce nuisance calls.
- Provide specialized control processes.
- Produce detailed BAS reports for the internal hospital reporting board.

Before the Andover system, controls were awkward and time-consuming. In just one area — response time — maintenance hours were quite significant. “We responded fairly quickly, but a typical room call averaged 30 to 40 minutes for a full check of calibrations, room temperatures, and functions,” says Kinney.

Kinney has been with LMC for 19 years and promotes a team process. “My approach is to improve performance of equipment and instill that into others,” he says. “We do this with automation and buying efficient equipment.” Kinney also listens to users. “We involve as many of the users as possible to make sure that we meet their needs. Next, we feed that to our design engineers: electrical, mechanical, and architectural. It’s a team concept.”

Rick Kinney, Technical Coordinator, Plant Utilities, Exempla Healthcare



Exempla Facilities — A Long History of Andover Controls

LMC began using Andover Controls products in 1983 with the company’s first-generation product family, the AC256 system. In 1991, LMC asked Larry Brand, President of *Westover Controls*, the local Andover Representative, to join the team. Brand explains that “Lutheran Medical Center needed to replace an outdated pneumatic controls system. They chose new Andover Controls components for their flexibility and simplicity.” *Westover* prides itself on a “strong relationship of trust” with clients and soon became a very active part of the LMC team.

With *Westover’s* assistance, LMC upgraded to Andover Controls’ second-generation product line, the *Infinity* system. This comprehensive, campus-wide system encompasses the hospital, outlying medical office buildings, West Pines, and the Colorado Lutheran Home. In 1997, LMC and St. Joseph’s Hospital in Denver became part of Exempla Healthcare. After they were tied together through a Wide Area Network (WAN), they saw the benefits of integrating the two different BAS systems for centralized management and cost reduction. In 1999, following these successes, LMC used Andover Controls newest product line — *Continuum™* — to unify access and photo badging control.

Larry Brand and his team continue to work with Rick Kinney to support Exempla as it makes the transition to *Continuum* products, increases the scope of operations controlled by Andover, and expands into new buildings.

Lutheran Medical Center — “The Big Robot”

The 80-acre LMC campus uses an Andover Controls system for close to 1,500,000 square feet (139,350m²) and over 6,500 points. It has over 600 stand-alone controllers (terminal, system, and access), all integrated through the hospital’s 100mb Ethernet with CAT5 and fiber for short and long runs, respectively. Maintenance is standardizing on Windows NT. As Kinney says, “It’s a big robot over here.”

Current LMC systems controlled by Andover equipment are:

- HVAC
- Refrigeration
- Security: Access Control, Photo ID, CCTV
- Medical Gas Monitoring
- Ground Irrigation
- Power Backup
- Smoke Control
- Isolation Room Control



Infinity Control Panels



Lutheran Medical Center

Continuum CyberStation™ Delivers Total, Effortless Control

Comprehensive systems control is delivered by eight new *Continuum* CyberStations that are replacing *Infinity* SX 8000 front ends. This software is backward compatible, which will integrate the *Infinity* and its five PCs on various Exempla campuses and accesses any point on any campus via the local Ethernet and system WAN. Three of these CyberStations are at LMC's physical plant, located just west of the main hospital, and provide access to any BAS point on the local campus, and through the WAN, to all points at St. Joseph's Hospital in Denver, several miles away.

Continuum enables the seamless integration of HVAC and access control. Kinney explains, "There's very little we do not try to do with it because it's so user friendly. It's not only a *Continuum* workstation, but it's a multifunction workstation for regular office functions. It's nice to have one package instead of having to run from computer to computer." Exempla's maintenance staff can monitor and control any system on the Andover System – HVAC, Security, Power Backup, etc. — from one screen.

Further, by using Andover's *Plain English*® programming language, personnel can easily create custom sequences, processes, alarms, and more. And, with *Continuum*'s custom reporting functions, it's easy for staff to generate the automation systems reports required by the hospital's internal reporting board.

Infinet Controllers with LCD Display/Keypad Make Mechanical Room Readings a Breeze

Kinney takes particular pride in his mechanical rooms. "You could probably eat off the floor or any piece of equipment," he says. In addition to the cleaning and painting of HVAC equipment, monitoring the 18 mechanical rooms at LMC used to be quite a chore. "Where I have a mechanical room that carries six air handlers, two heating pumps, converters, med air pressures, etc., it takes a person a while to take readings off different points."

With the Andover LCD display/keypad, life has changed. Maintenance personnel simply go to one point and check all readings. "For a simple point of reference in a large mechanical room, they come in handy. You don't need to have the temperature probes and gauges hanging on the equipment, which people rarely check for calibration anyway," Kinney notes.

Precision Control for Specialized Rooms

As with any hospital, LMC has rooms that require exacting environmental control of negative or positive air pressure, temperature, and humidity. For example, operating room environments must quickly change during an operation, and from operation to operation. "One minute they could have a heart case and they want the room at 60 degrees. Then, during recovery, they want 80 degrees," Kinney says.

With the Andover EMX 170 keypad and display, operating room staff can create ideal conditions with one button that accesses pre-programmed conditions previously specified by the OR team. "They have full control of their ORs," stresses Kinney. "They sit down with us and give parameters. It's all been engineered to function that way. They simply use a keypad with a display for temperature and humidity."

Furthermore, if the OR team has a problem, they can call maintenance and have it assessed and corrected without a visit. Most of the time, maintenance staff can solve the problem with *Continuum* CyberStation by accessing the particular room and restoring desired conditions. Staying away from the OR not only benefits maintenance, but the OR as well: "We contribute to the infection control because we don't have to enter the OR to make these adjustments or test controls," says Kinney. "Having remote controls enables us to do a lot before we have to dispatch someone." In addition, *Continuum* allows specialized control for TB, infection isolation, and decontamination rooms.



Main Power Panels



EMX 170 Keypad

Andover Simplifies Security

As with any large organization, security control at LMC and St. Joseph's Hospital is demanding and complex. It includes a CCTV system with 48 cameras, HID proximity readers, door controls, and card access for both campuses and all parking lots. The system uses the First Line™ CCTV digital surveillance solution from Integral Technologies of Indianapolis, Indiana (recently acquired by Andover), as well as various Andover access security controllers such as the ACX 780 and ACX 781. Security offices at both LMC and St. Joseph's Hospital use *Continuum* CyberStation to integrate all security functions into one front end for complete security intelligence and control and the power to see all CCTV and security information for both facilities from both facilities.

"Four years ago, we had three different security systems," says Kinney "LMC had two badging situations and St. Joseph's Hospital had their own. We used magstripe here. They used barcode over there. Neither one was desirable, so we wanted to transition to proxy readers. The challenge was to come up with a badge design that could use all three technologies."

With the help of *Continuum's* bundled photo badging and video solution, Exempla now has one HID proximity card that will work at every building and parking area on all campuses. In addition, *Continuum* enables maintenance or security to lockdown specific areas. "If they have a combative patient or disruptive people outside or inside the place, we can secure it to maintain safety," says Kinney.

Getting Creative — Power and Water Control

Essential control systems aren't the only areas where Andover Controls technology works at Exempla with Andover's simple *Plain English*® programming language and their TCX 851 terminal control units, Kinney has even taken on power and irrigation applications! "A few years ago we made an agreement with our electric utility, Public Service Company," says Kinney. "We got a break on our utility costs if we ran generators during their peak loads of the day." By using the Andover system, Kinney was notified of peak periods and switched over to generators for significant savings.

If that isn't enough, Kinney decided to address the irrigation system for the over 80 acres of LMC property. Again, by using Andover's intuitive programming language, Kinney creates custom applications. He explains that LMC was spending a good deal of money to maintain all the transfer pumps for irrigation and retention ponds. "I said if we have a conduit out there then I can control it and write the programs for it," he says. "It actually reduced the workload for the groundspeople."

Andover Controls Delivers Far-Reaching Benefits

According to Rick Kinney and *Westover Controls'* Larry Brand, Andover is delivering powerful benefits in every area. End users are able to easily and quickly control their environments and realize more consistent conditions for specialized rooms such as the OR. Over almost two decades, LMC has found that the Andover system:

- Provides solid energy savings.
- Delivers equipment payback in 2–3 years.
- Greatly reduces maintenance costs.
- Is easy to install and operate.
- Is easy to maintain.
- Allows staff to create custom control applications.
- Simplifies security management.



Badging Office



Chill Water Plant



Cooling Tower Plant

The savings have been very great in manpower alone, says Kinney, "The VAV controllers have been very beneficial. In the emergency department alone, in a six-month period, we logged 1,500 service calls. Out of these, probably 90 percent were nuisance calls that took 30 – 40 minutes of manpower each." Rick notes that there are now 50 percent fewer calls and that his team can now respond without making the trip to the user as was normally required. "That's quite a bit of savings," he stresses.



Larry Brand, President, *Westover Controls*, and Rick Kinney inspect an energy control panel.

What's more, the Andover system isn't merely a control system, but a diagnostic one as well. "Andover is one of the tools we use to test the function of the system," says Kinney. "Since the Andover system is so easy to program and tune, when you get a new piece of equipment, you can test performance and tune to its maximum performance. It's very easy to do. I get ridiculous. I hate to see a half a degree change."

In addition, the maintenance department has become self-sufficient, says Kinney. "I find it's very easy to maintain the Andover system. It's easy to learn too. It's hard to sit down with a mechanic and teach him a computer-automated system. But, most of these guys picked up the Andover system quite well. It has a very friendly GUI."

A Future of Cost Reduction and Control

As part of a 10-year growth planning process, Exempla engaged HRE Inc. and H&L Architects of Denver, Colorado to assess their HVAC and BAS performance at LMC and St. Joseph's Hospital. The firms looked at five years of historical data and found that Andover Controls solutions enable tremendous savings: LMC has such a reduction in energy usage that Andover equipment pays for itself in only 2–3 years. In addition, with 50 percent cuts in nuisance calls and the ability to solve problems without going to users, the manpower savings is also dramatic.

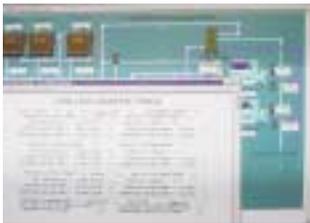
With this great Andover track record and rapid ROI, Exempla has mandated it for all controls. Flat spec. Period. Kinney is very pleased. "The Andover system is very user friendly, easy to maintain and program. The hardware is good, and the guys in the field like it." He's also been very happy with the support from Larry Brand and *Westover Controls*. "The support factor from *Westover* is great, even though we do a lot here. They're very prompt," he says.

Exempla is currently upgrading all Andover systems to *Continuum*. With so many successes, Exempla also plans to expand Andover technology into many new areas including HVAC control at St. Joseph's Hospital,



Continuum™ Product Family

lighting control at LMC, and many new additions. Everything, everywhere will be Andover. "We're a non-profit organization," stresses Kinney. "If we don't make a savings, we don't get upgrades. We don't expand our services. Everything that we make goes right back into our facilities, and we also pass that cost savings on to the consumers."



Summary Report of Chilled Water System



Instant Alarm Notification



Door Scheduler

PROJECT AT A GLANCE:

Project Type:

Integrated (HVAC & Security)

Project Name:

Exempla Healthcare

Location:

Denver, Colorado

Market Segment:

Healthcare

Number of Buildings:

16

Total Square Feet:

over 2,500,000 (232,250 m²)

Andover Controls Equipment Installed:

8 – *Continuum* CyberStations (Windows NT)
 20 – EMX 170s
 6 – CX 9200 Network Controllers
 9 – *Continuum* NetControllers
 33 – SCX 920s
 4 – LCX 800
 30 – LCX 810s
 614 – TCXs (850, 851, 853, 860, 863)
 18 – ACXs (700, 780, 781)
 7 – *Continuum* AC-1s
 18 – AC256 IOUs

Integral Technologies Equipment Installed:

2 – FirstLine™ DVX Digital CCTV Recorders
 29 – cameras at LMC
 19 – cameras at St. Joseph's

Network:

Fiber Optic WAN and wireless Ethernet

Applications:

Temperature and humidity control
 Refrigeration
 Access control
 Photo ID
 CCTV
 Smoke control
 Medical gas monitoring
 Ground irrigation
 Power backup
 Isolation room control

Third-party equipment and/or drivers:

York chillers

Number of Controlled Doors

93

Number of Cardholders

9,744

Total System Points:

over 7,500

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