

DAIKIN APPLIED'S 25-YEAR LIFECYCLE ANALYSIS SAVES COUNTY \$50,000

“Daikin’s ability to deliver on time, especially during the COVID-19 confusion, was critical to the success of this project and the safety of people.”

– Rick Anderson, Mechanical Engineer, Apex Engineering

Overview:

The Chippewa County Law Enforcement Center was originally constructed in 1949. The facility has had several updates and additions over the years. Currently, the facility is comprised of three stories and provides space for 201 inmates. Its mission is to serve the community by helping to enhance its safety, while at the same time, seeking to care for those individuals that are housed in the jail.

The facility’s chiller system—primarily serving a 2001 addition—was approaching the end of its lifecycle. It would require significant repairs to remain operating correctly. Building management determined it was time to replace it—and extend the new system to cover the 1950-era addition as well. They reached out to Rick Anderson of Apex Engineering in Eau Claire, Wis., to propose a new system.

Apex faced several project challenges. The primary challenge was for the proposed cooling unit to fit on an existing steel platform while still meeting the robust cooling demands. Noise was another factor: The facility is located in a residential neighborhood. Moreover, the chiller is in close proximity to both administrative offices and inmate housing. All of these factors meant that the entire solution needed to meet specific requirements including physical dimensions, noise output, efficiency (in order to qualify for utility rebates) and a narrow installation window.

**LOCATION:**

Chippewa County Law Enforcement Center

Chippewa Falls, WI, USA

**AREA SERVED:**

100,000 square feet

**CHALLENGE:**

Specify and install a new HVAC chiller within specific time, space, and noise constraints

**SOLUTION:**

Pathfinder® configurable air-cooled screw chiller

CHIPPEWA COUNTY LAW ENFORCEMENT CENTER



Solution:

Rick Anderson, of Apex Engineering, initiated the design-for-replacement process. Bartingale Mechanical was selected to install the system. Gary Krebsbach, Sales Engineer with HVAC equipment supplier SVL, worked with Anderson to determine the best solution for Apex's tight specification—which turned out to be the Daikin Pathfinder® (AWV-016A) air-cooled screw chiller.

Krebsbach worked to design and optimize the solution with the highest tonnage, efficiency, and lowest sound output—without exceeding the size and weight limitations of the existing steel platform. Daikin's selection software allowed him to provide a unique chiller configuration to fit within the jobsite constraints. The benefit of the "custom fit" would be realized in terms of installation time and cost savings; no structural reviews or steel modifications would be necessary. Moreover, by configuring the electrical requirements (required wire size and circuit breaker size) around the existing site, he knew the electrical infrastructure would not have to change either, resulting in even greater time and cost savings.

According to Krebsbach, "The Pathfinder's fully configurable design and component options allow us to build a cooling solution to meet exacting requirements. Daikin gives us the tools to optimize the solution. They allow us to put different combinations of compressors, evaporators and condenser fans together to optimize performance for any footprint. Also, the ability to customize the unit allowed us to limit the evaporator pressure drop so we could reuse the existing circulating pumps, which were in good condition."

"With Pathfinder, we're able to deliver a truly engineered solution that is far superior to a typical off-the-shelf chiller," Krebsbach concluded.

The award-winning* Pathfinder is offered in 100-565-ton configurations and is one of the most efficient air-cooled screw chillers on the market. Key to the success for this application, it features proprietary variable-volume ratio (VVR®) single-rotor compressor technology and fully-variable-speed ECM condenser fan motors which work in tandem to offer not only high efficiency, but also ultra-quiet sound levels.

One of the final considerations in Apex's choice of Daikin as the preferred equipment manufacturer was the expense of operating the chiller over the course of its expected life. The competitive bid initially focused on the first cost of the technology. Yet that didn't factor in the lifecycle cost that makes Daikin's Pathfinder the best investment:

- The Daikin solution qualified for \$5,000 more in utility rebates.
- While meeting the full-load EER, the competitive solution did not match Daikin's part-load IPLV EER values. Daikin's EnergyAnalyzer 3 modeling software proved that the Pathfinder offered a lifecycle cost difference of \$50,000.

With the Pathfinder also providing ideal sound parameters, it was the clear winner.

Outcome:

Because it was tailor-made around their site considerations, the Daikin flexible chiller solution was able to be installed in only a week, easily meeting the project's installation window. Moreover, the unit has been operational for several months and is performing beyond expectations. According to Anderson, "Timeliness was an important factor in this project. There were no start-up delays and Daikin delivering on time, especially during the COVID-19 confusion, was critical because we had to have a specialized crane scheduled to do the lift."

"Last, the inmate population could not be relocated outside the building so project speed and efficiency were important to the safety of jail personnel," Anderson said.



*AHR Innovation Award, 2017; Frost & Sullivan Manufacturing Leadership Award, 2017; Consulting-Specifying Engineer magazine's Best New Product of the Year, 2016 and 2020.