



Senior care community cuts energy costs by increasing efficiency with free-cooling chiller

Amid the sprawling cornfields of northern Iowa, the community of Fort Dodge is often subjected to brutal winters; low temperatures can easily dip below zero for days at a time. Yet, even in the midst of an arctic blast, some indoor environments require cooling. Such is the case at the Friendship Haven senior care community, where the server room in one of its buildings calls for cooling every day, year-round.

It's a situation that, at one point, posed a significant challenge.

"The chiller would just kick on for a couple of minutes to cool things down in this room and then shut off," said Bob Kahn, account executive with Johnson Controls, which was providing chiller maintenance service. "And the constant on-again, off-again churn was taking its toll on the unit."

Although the chiller was just three years old at the time, it was not designed to run year-round in an environment where ambient temperatures fall below zero. As a result, the long-term reliability and efficiency of the unit was being compromised. Critical chiller components were failing, maintenance costs were mounting and energy costs were rising.

Project AT-A-GLANCE:

Location:

Friendship Haven
Fort Dodge, Iowa

Turnkey Project Included:

- YORK® YVFA Free Cooling Chiller with Variable Speed Drive
- Chilled water piping and pumps with Variable Speed Drives
- Smart Connected Services

Overall Project Cost:

Initial Investment: \$346,000
Utility Rebates: \$171,000

Expected Project Results:

Annual Energy Savings: \$29,000
Payback: 6 years



The solution: Get the right chiller for the job

Johnson Controls developed a plan to accomplish two things: Put a stop to the unnecessary wear and tear on the three-year-old chiller (preserving its remaining useful life) and deliver year-round cooling to the server room efficiently.

The strategy involved installing a chiller designed specifically for cold-weather cooling: The YORK® YVFA Free Cooling Chiller with Variable Speed Drive. The model is the first of its kind offered by Johnson Controls with free cooling capability. To meet the winter cooling load, the YVFA uses integrated free cooling coils to cool the building's cooling fluid, reducing or eliminating the need for mechanical cooling when conditions allow. At Friendship Haven, the new chiller would deliver efficient wintertime cooling to the server room and, combined with the three-year-old YVAA variable speed chiller, would provide efficient cooling across the entire senior care community during summer.

The project also involved the installation of new chilled water piping, chilled water pumps with Variable Speed Drives, Connected Services and the modification of chiller sequencing. The components combined to create a solution that will reduce greenhouse gas emissions and is expected to deliver overall energy cost savings of up to 30 percent.

Data-driven ROI sealed the deal

The project's return-on-investment estimates were based, in part, on data obtained and analyzed through Johnson Controls Connected Services. The program monitors chiller performance and collects and securely stores operational data in the cloud-based Johnson Controls Remote Operations Center.

For Friendship Haven, the collected data was used to accurately calculate the required wintertime cooling load so that the planned solution was certain to meet the need. The data also allowed Johnson Controls to confidently estimate the projected energy savings, which was validated by the local utility and which helped to secure \$171,000 in utility rebates.