Project Profile

Children's of Alabama

Digitally enabled operations and maintenance

The project:
Children's of Alabama partnered with Johnson Controls to reduce energy, operational, and maintenance costs through a long-term Operations and Maintenance (O&M) contract.

The challenge:
Children's of Alabama is the third-largest pediatric medical center in the United States. It has delivered specialized care to the community since 1911.

Ranked as one of the best pediatric medical centers in the nation, it holds a valuable position in Alabama as the only medical center dedicated solely to the care and treatment of children, and the only Level 3 trauma center in Alabama.

In 2008, the non-profit hospital sought a way to maximize energy savings in their new 14-story patient tower in the heart of Birmingham.

Emphasizing their need to be good stewards of financial donations, the hospital sought a partnership to find innovative solutions to drive maximum efficiency of operations, lower energy costs, reduce risk of failure, and provide guaranteed outcomes.

The solution:
The hospital selected Johnson Controls to provide an Infrastructure as a Service (IaaS) project where we Designed, Built, Operated, and Maintained (DBOM) the new Central Utility Plant (CUP) for the first four years of the contract term. In year five, the hospital converted the contract to an O&M contract with an equipment availability and energy performance guarantee.

Building upon a relationship lasting more than 25 years, the hospital and Johnson Controls collaboratively designed the new CUP to drive energy savings using innovative high-efficiency equipment and a blend of people, process, and technology to reduce the operational spend for the plant without sacrificing reliability.

Our design featured a highly efficient heat recovery chiller that could provide both chilled and hot water to the hospital while significantly reducing natural gas usage. The use of on-site personnel, preventative maintenance, and advanced monitoring technology has enabled the hospital to run the plant with only a single full-time manager.

Johnson Controls operates the CUP and holds the risk for all building systems, including the HVAC system, the roof, driveways, and even the interior paint. With Johnson Controls designing, operating, and maintaining the CUP, it has met or exceeded performance guarantees during each year of the contract, providing approximately $250,000 in savings annually.

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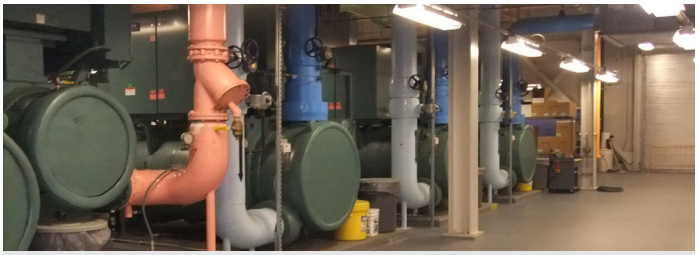
Growing with the hospital

As the hospital system grew, Johnson Controls helped the hospital plan expansions of their buildings and helped make business cases for further improvements in efficiency.

- Expanded CUP capacity as the hospital added the McWane, Lee, and Park Place buildings to the CUP chilled and hot water systems.
- Added controls, chillers, and additional maintenance contracts over time, which necessitated adding two technicians to the on-site team.
- Helped the hospital achieve LEED Gold Certification in 2013.
- Implemented OpenBlue Enterprise Manager and OpenBlue Central Utility Plant to drive additional savings through intelligent controls.



The plant provides a cooling capacity of 5,000 tons and a heating capacity of 49 MMBtu. Built with room for expansion, the CUP also houses the hospital's emergency generators and features:

- Eight 3,000 MMBtu boilers
- Two 6,000 MMBtu boilers

Leveraging advanced technologies for greater efficiency

In 2017, the hospital wanted to find a way to drive additional savings while also demonstrating how well the improvements were performing. We implemented our OpenBlue Enterprise Manager software solution to identify opportunities for savings and efficiencies by continuously analyzing data from the building systems. The software uses data visualization and dashboards to provide a real-time picture of how well the systems are performing. The information helps the hospital decide where to spend preventive maintenance dollars and helps the on-site team proactively identify the source of failures.

In 2018, we began a two-year effort to implement an OpenBlue Central Utility Plant program at the plant. This technology automatically generates and implements optimization decisions by continuously monitoring inputs and data from connected equipment and combining it with external information, such as weather forecasts and utility rates. The software analyzes the data and makes decisions on which pieces of equipment to activate based on the dollar values of those decisions. It calculates the least expensive way to supply chilled and hot water to the hospital and then dispatches those systems.

OpenBlue technology has enabled the hospital's main campus to reduce the use of natural gas by **69 percent**. In fact, the change reduced the use of natural gas to such a degree that the existing gas meter at the McWane building was unable to measure it, forcing the utility to install a smaller meter. When complete, the hospital expects this project to save **$450,000 a year**.

Outcomes that Matter:

- CUP construction completed ahead of schedule
- Performance has met or exceeded guarantees each year, providing around $250,000 in savings annually
- Reduced natural gas consumption at the hospital's main campus by **69 percent**
- OpenBlue software and plant retrofits expected to save **$450,000 annually**
- LEED Gold Certification achieved
- Expanding LEED initiatives in the other buildings to drive similar outcomes

Marty Vickers, the Johnson Controls Customer Business Manager, has been the dedicated on-site lead for the project since the beginning of the O&M agreement. To ensure the project's success, Marty is deeply integrated into the hospital's maintenance activities. The hospital leadership and staff view Marty as a member of their team. Together, they drive great results through collaboration, alignment, and a focus on achieving the lowest cost of operations possible without affecting the hospital's patients, staff, and activities.

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