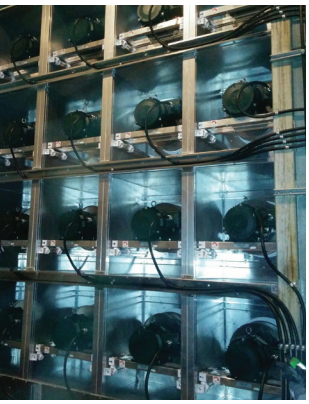

HOSPITAL UPGRADES FUNDED FROM UTILITY SAVINGS

The Royal University Hospital (RUH) is a leader in providing acute-care services for the Saskatoon region, serving as the main trauma center for the entire region and housing many maternal and child, neurosurgery and cardiovascular surgery services.

Working with Johnson Controls, the hospital has invested CAD $13.6 million to provide critical facility upgrades that ultimately will save CAD $1.4 million per year, along with providing a healthier environment both inside the hospital and in the larger community.

The 1.6 million-square-foot facility was constructed in 1955, with a 1978 addition. In 2014, RUH entered an energy performance contract (EPC) with Johnson Controls aimed at facility improvements paid for over time by energy, water and operational savings. With the approval of the Ministry of Health, the Region borrowed the funds to pay for the project, and the annual cost savings will be used to make those loan payments. Support from the Government of Saskatchewan was integral to the completion of the project.

Johnson Controls completed improvements in lighting, water use, building envelope, steam pipes and traps, hot water pumps along with speed drives, and ventilation systems by June 2016, about five months ahead of schedule. Through measurement and verification, the initial savings are almost double the guaranteed amount. In just the first two reporting quarters, the total savings is CAD $899,192, exceeding the savings target guarantee by CAD $433,304 or 48.2 percent.

PROJECT AT-A-GLANCE:

Location: Saskatoon, Saskatchewan, Canada

Facility: 1.6 million square feet

Project Scope: Energy Performance Contract investing CAD $13.6 million in upgrades, paid back with utility and operational savings.

Savings: CAD $1.4 million per year

Other Benefits:

- Reliable Operations
- Reduced Environmental Impact
- Brighter Work Environment
- Better Air Quality

Partner: Government of Saskatchewan

DETAILED FACILITY AUDIT

A team of Johnson Controls engineers, consultants and contractors used energy analysis and on-site survey information to compile a detailed list of measures that would improve the energy consumption of the facility and mitigate the risk of managing aging infrastructure.

Working with hospital staff, they found examples of pumps that functioned all year long regardless of outside air temperatures, air handling systems that ran even when no one was in the area, and exhaust fans that continuously operated even when equipment was not in use. In addition, poor lighting made common areas look gloomy and dull.

Johnson Controls

The upgrades included:

- **Lighting** – Johnson Controls reviewed more than 16,000 fixtures. They retrofitted lamps and ballasts of older light fixtures as it was determined that keeping the existing fixtures with some adjustments offered the greatest savings opportunity with the least occupant impact. Additionally, incandescent or compact fluorescent lamps were replaced with long-life LED lamps, meaning reduced service and labor costs, especially in hard-to-reach locations.
- **Water** – Installed low-flow and more efficient toilet, faucet, show and urinal fixtures to decrease water use by 60 percent and reduce the amount of water to be heated, resulting in both fuel and water savings.
- **Building Envelope** – Weather stripping or sealant was applied to doors and windows to help cut down on outside air infiltrating the building.
- **Pipe Insulation** – Installed insulated covers on 325 portions of the steam distribution system to reduce wasted heat energy, making the system work less to meet the required temperature.
- **Building Automation System** – By connecting occupancy sensors, the hospital is reducing energy while certain areas of the campus – such as Hantelman and Ellis Hall – are unoccupied overnight and on weekends. Upgraded digital controls provide operators with better information to control the environment, such as adding schedules to the HVAC system.
- **Fans** – All fans in the wards, general and operating room systems were all at the end of their life cycle and were costing facilities management constant dollars to repair. The new fan systems provide redundancy capabilities that greatly enhance facility operations. For instance, instead of having just two fans in the operating room area that caused shutdowns if one was not working, Johnson Controls installed a wall of 15 more efficient fans that provide backup.
- **Steam Traps** – Several were replaced in an effort to reduce losses and keep the system working efficiently to meet the required temperature, thus using less fuel.

MINIMIZING IMPACT

Once all the improvements were installed, Johnson Controls worked to optimize and attain even more savings by looking at equipment schedules, fresh air intake, equipment sequencing and other measures – always keeping patients and staff in mind.

"A large part of this project was the scheduling of time for when the contractors could perform their work," said Brian Berzolla, director of facilities, Saskatoon Health Region. "The region's capital planning and project management staff was instrumental in making sure that the right people were in the right place at the right time so that patients and staff were minimally impacted."

"The EPC allowed us to find dollars to do a whole pile of improvements and be paid back by the money we would have spent on utilities. We're saving more money than was anticipated and making payments on the loan, but we have extra funds to go back into the hospital operations," said Berzolla.

Environmental benefits include these annual equivalents:

- Saving about 29 Olympic size swimming pools of water.
- Turning off 10,509 60-watt light bulbs.
- Reducing energy use of 933 homes.
- Offsetting carbon emissions from 12,016 barrels of oil.

"We recognize that health care is a huge negative contributor to the environment, and that's contrary to the 'first do no harm' philosophy of medical professionals. We have a duty to mitigate the environmental impact on public health, and we're doing that by reducing energy and water waste," according to Nilesh Kavia, vice president of finance and corporate services, Saskatoon Health Region. "Best of all, the project was done at no incremental cost to the taxpayer."

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Photos courtesy of Saskatoon Health Region.

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