

The Challenge

Situated in a remote area in Northwestern Ontario, Dryden Regional Health Centre (DRHC) has provided the community of Dryden and the surrounding areas with professional, compassionate, safe and high-quality patient healthcare since its founding in 1952. The 42-bed facility supports the work of more than 300 staff, physicians, nurses and volunteers.

As is often the case with rural health care facilities, the hospital's greatest challenges center on controlling operational costs. So when a taxpayer group determined that the facility's electricity bills had increased close to 44% between 2012 and 2017, and provincial changes in pricing and rebates would add a more than 31% increase in November 2020, the facility's leadership worked hard to find an alternative solution that could reduce the hospital's dependence on provincial and hydro-based energy.

DRHC decided to install Capstone microturbine technology in a configuration that would dramatically reduce energy costs and emissions while also increasing energy efficiency and reliability.

The Solution

Capstone distributor Vergent Power Solutions, working with local engineering firm LBE Group and their construction partner, Dave McKay Construction, installed the new cogeneration system in October 2019. It features four natural gas-fueled C65 microturbines, which replaced an old boiler. The microturbine array functions in grid connected operation, which allows the customer to operate in tandem with the utility while also alleviating strain on this remote section of the power grid.

Power Profile

Customer

Dryden Regional Health Centre

Location

Dryden, Ontario, Canada

Commissioned

October 2019

Fuel


Low Pressure Natural Gas

Technologies

- 4 C65 ICHP Microturbines
- 1 PLC Remote Monitoring

Capstone Turbine Distributor

Vergent Power Solutions



“The Dryden Regional Health Centre (DRHC) selected Capstone do to their high reliability, modularity, low emissions and low maintenance requirements as significant advantages over other technologies for installations in remote Northwestern Ontario.”

— Austin Madussi, Director of Facilities
Dryden Regional Health Centre



With the installation of four C65 ICHP Capstone microturbines, the Dryden Regional Health Centre has seen a reduction in annual electricity costs of over 50% while powering almost 100% of the hospital all winter and providing 100% of the heating for six months of the year.

In addition to providing electricity, the system also supplies the building's heat by repurposing the exhaust produced by the microturbines. This has the added benefit of reducing the facility's emissions and increasing efficiency by up to 80%.

The hospital chose Capstone technology due to its ease of maintenance, high uptime and low maintenance requirements. For a remote, difficult to reach area, it was especially important for the facility to be able to perform its own maintenance. The system is also supported with remote monitoring by Vergent Power Solutions, which can immediately alert the hospital of any equipment issues.

To keep the system operating at its best, the installation has a 15-year Factory Protection Plan (FPP) that includes two engine overhauls over the span of the contract. The comprehensive FPP is designed to give financial peace of mind to Capstone customers by providing product life cycle costs at a fixed rate for both scheduled and unscheduled maintenance for the life of the microturbine system.

As a rural Canadian hospital, the DRHC system is the first installation of its kind, and it is designed to withstand harsh weather conditions where winter temperatures can reach -40C° (-40F°).

The Results

As predicted in the planning stages, the new system was able to reduce electricity usage by 80%. The site was also able to maximize energy efficiency, providing an average total system efficiency of 80% LHV. Along with the offset in the cost to otherwise heat the facility, the hospital has realized a savings of \$175,000 CAD per year.

In its first year, the system provided over 8,000 hours of continuous power. Factoring in a \$263,000 financial incentive from the IESO PSUI Save on Energy Program, the system is expected to pay for itself in five years.

"If it was not for the cogeneration project, we would be paying our previous utility rate from the 2018/2019 fiscal, which was approaching the half million dollar mark," said Austin Madussi, DRHC's Director of Facilities.

DRHC's forward-thinking approach to combatting rising energy costs was in line with their overall philosophy of innovating to best meet patient care needs. "The project improves several operational needs. ■

Capstone C65 ICHP Microturbine



A C65 provides up to 65kW of electrical power while the UL-Certified C65 ICHP provides up to an additional 150kW of thermal power for CHP and CCHP applications.