



CASE STUDY: RED DEER POLYTECHNIC

BACKGROUND

Red Deer Polytechnic is a post-secondary institution located in Red Deer, AB that has been in operation since 1964. Red Deer Polytechnic installed a 1MW CHP to reduce their utility costs, while reducing their carbon footprint as well.

Company Name: Red Deer Polytechnic
Building Type: Post-Secondary Institution
Location: Red Deer, Alberta
Power System Installed: 1MW CHP System



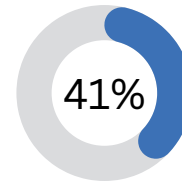
- This unit helps lower the institution's utility costs. Thermal energy is captured from the engine jacket water and the engine exhaust.
- Collicutt Energy was hired to design and build the 1MW CHP system that was then installed in the building in 2018.
- The unit produces 1,007kW of electricity and as much as 1,054kW of thermal energy. When all heat is consumed the grid intensity of power generated is 0.24kg/kWh, 55% less than current average Alberta grid intensity.
- The plant has been running for 3 years and just recently had a top end overhaul completed.

System Sizing

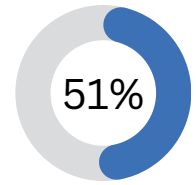
The system size was determined based on the baseline electrical and thermal load. This ensured that all the electricity and as much of the heat produced would be effectively utilized by the building.

System Manufacturing

Once Collicutt completed the engineering and design, the CHP system was manufactured at Collicutt's 80,000ft² facility in Red Deer. A walk-in style enclosure was selected allowing routine maintenance and inspection to be conducted comfortably even in outside conditions as low as -40°C.



Electrical
Efficiency



Thermal
Efficiency

TOTAL ENERGY EFFICIENCY OF 92%

COMBINED HEAT AND POWER (CHP) IS THE SIMULTANEOUS GENERATION OF POWER AND HEAT FROM A SINGLE FUEL SOURCE, ALLOWING SYSTEM EFFICIENCIES OF UP TO 93%.

The infographic shows a fuel tank on the left with an arrow pointing to a CHP unit. From the unit, an arrow labeled 'Waste As little as 7%' points upwards. Two arrows point to the right: 'Electricity up to 45%' and 'Heat up to 48%'. Below the unit, it says 'CHP Up to 93% efficient'. To the right is a house icon with a plug and radiating lines.

THE BENEFITS OF CHP

- Reduced Utility Cost** Generating power and heat locally can dramatically reduce the overall cost of utilities.
- Reduced Carbon Footprint** CHP technology uses clean burning natural gas to lower the overall volume of greenhouse gas emissions produced.
- Increased Reliability** When grid failure or interruptions occur, localized power generation continues to produce power, minimizing or eliminating downtime.
- Revenue Generator** Excess power produced by a CHP unit at your facility can be exported to the grid, increasing your revenue and your facility value.

Payback periods of as low as 3-5 Years

Electrical Efficiency of up to 45%

Sustainable
CHP has tremendous economic potential. Collicutt Energy can support your facility feasibility review.

Best-in-Class
With our in-house engineering team, Collicutt Energy can design and build the most optimally designed solution for your application.