



Cogeneration

> Case History

SNC-Lavalin building | Calgary, Alberta, Canada

Our energy working for you.™



**Western
Canada**

Where:

Calgary, Alberta, Canada

What:

A turnkey combined heat and power (CHP) system producing 139 kW of electricity and 706,309 BTU heat per hour to provide space heating and offset power produced at higher cost from the utility.

Purpose:

To save the tenant approximately 14% on electricity costs for green electricity while increasing revenues for the building owner and thereby increasing building value. The system will avoid between 500 and 700 tonnes of greenhouse gas emissions per year.

Primary choice factors:

The reputation of Cummins Power Generation and product from Power Ecosystems / Ener.G, positive comments from other reference sites (among thousands of reference sites) and expertise and financing options provided.



Material building valuation gain simultaneously to electricity cost savings for sole tenant of SNC-Lavalin building with cogeneration boiler

The 106,000 square foot SNC-Lavalin building was built in 1979. It is a 10 story office tower whose primary tenant is world renowned SNC-Lavalin engineering. SNC is a company dedicated to environmental responsibility, and that dedication extends to its facilities. The company was considering purchasing green electricity at a rate premium when it became aware of green electricity available at a discount to conventional rates from Power Ecosystems.

Power Ecosystems installed the cogeneration system at no upfront capital cost to the building owner or the tenant.

A cogeneration boiler consists of a generator set, heat recovery equipment and a highly sophisticated control system for monitoring building electricity and heat loads as well as approximately 70 parameters pertaining to system optimization. The unit is the lead boiler on the building, uses natural gas and produces electricity and heat simultaneously for powering and space heating the building. Our enclosure technologies



The cogeneration boiler from Ener.G comes as a pre-engineered package solution driven by a Cummins generator. It is branded in Canada a Power Ecosystem.

ensure that the unit is extremely quiet, well under regulatory requirements and there is no vibration so it is virtually disturbance free to tenants or neighbors.

Our boiler produces green electricity almost for free.

	CHP Efficiency	Conventional Efficiency
Boiler	50%	80%
Electricity	30%	23%
Combined Efficiency	80%	51.5%

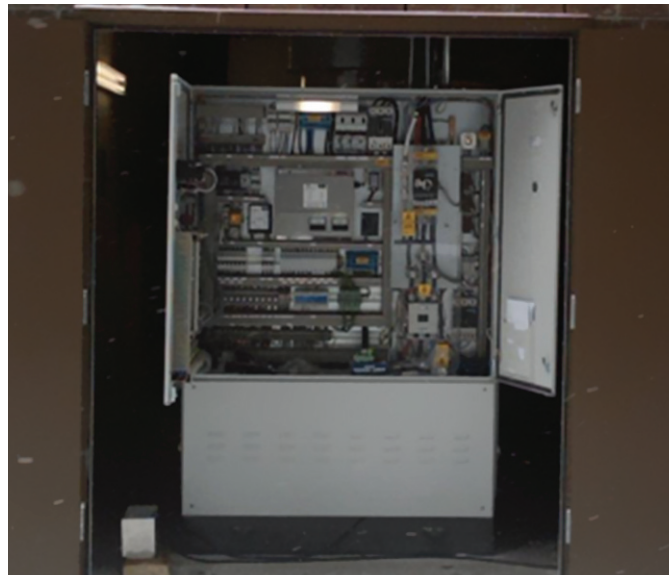
Studies show the grid uses 63% of fresh water used in Canada for thermal power generation and about 25 gallons per kWh produced with coal, our system uses and loses virtually no water at the same time as reducing greenhouse gas emissions equivalent to removing approximately 158 cars from the road or 660 acres of forest absorbing carbon.

Economic Benefit Calculations

Delivered costs at time of decision:

Green:	\$.15/kWh
Conventional:	\$.14/kWh
Natural gas:	\$8/GJ

Electricity output of CHP:	139 kW/h
Heat output:	706,309 BTU
Fuel input:	1.6 GJ/hr
All In Project Cost:	\$394,324
Maintenance costs:	\$.018/kWh



Conventional Cost:

Value of electricity from the grid:
 139 kW @ \$.14/kWh = \$19.46
 Value of boiler produced heat:
 230 kW = .828 GJ @ 70% efficiency = 1.18
 1.18 @ \$8/GJ = \$9.44
 Total: \$26.12/hour

CHP Cost:

Fuel for CHP:
 1.6 GJ @ \$8/GJ = \$12.80
 Maintenance:
 139 @ \$.018/kWh = \$2.50
 Total: \$15.30/hour

Total savings: \$10.82/hour

Greenhouse gas (GHG) potential:
 776 tonnes/year @ \$15/tonne = \$11,640/year

Total savings per year:
 \$10.82 X 7,271 operating hours (Sept to June)
 plus GHG = \$90,312

Simple Payback: 4.37 years

Power Ecosystems charges tenant \$.12/kWh and rent revenue shares 25% with building owner (approximately \$2,500-\$3,000/month)

\$30,000/year new revenue divided by 8% cap rate less capital expenditure (\$0) equals \$375,000 building valuation increase.

For more information contact Dan Cloutier
 403-703-7611 | danc@powerecosystems.com

Our energy working for you.™

www.westerncanada.cummins.com

© 2009 Cummins Western Canada Inc. All rights reserved. Cummins Power Generation and Cummins are registered trademarks of Cummins Inc. "Our energy working for you." is a trademark of Cummins Power Generation.

