

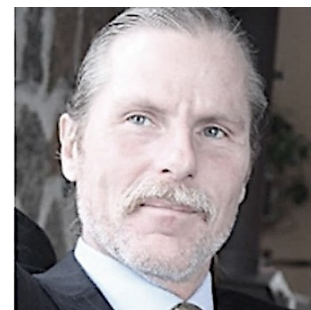
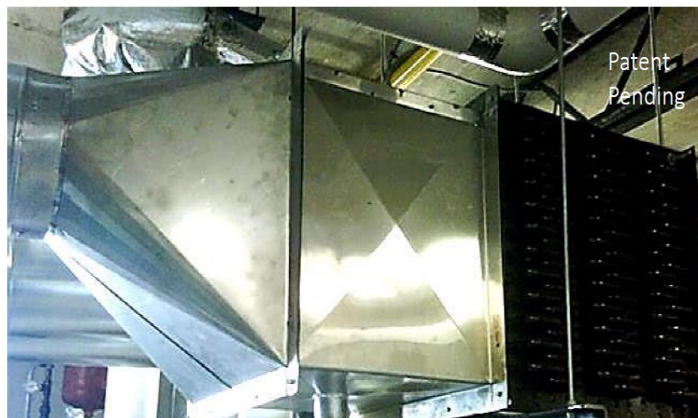
- 15-20% Natural Gas Savings
- Electrical Savings.
- Enbridge Financial Incentives
- 12-24 month ROI.
- Fully Automated.
- Project nominated for Guinness Book of World Records.



20 Barrel Yards Boulevard

HFG Boiler Energy Recovery Proposal

Clean Energy | Clean Water | Lives | Global Solutions



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HFG Case Study - Validation

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OPSEU PENSION TRUST (OPTRUST)
HIGH RISE

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OPSEU PENSION TRUST

High Rise Case Study Results

24-month payback period 50% ROI.

Temperature measurements were taken at the following points:

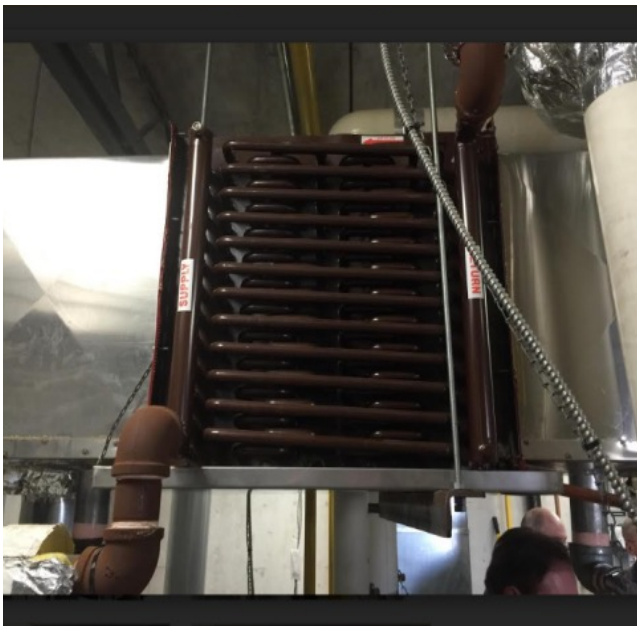
Boiler stack exhaust where it exits the boiler **327F.**

HFG Eliminator stack exhaust temperature **84.6F.**

Boiler room temperature 84.2F.

"Over 99% of the flue gas energy is recovered through the HFG Eliminator."

Andrew Lanesmith - 3rd party validation.
Energy Systems Specialist. P.Eng.



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DATE OF MEASUREMENTS: SEPTEMBER 28, 2016

Location of Installation: Cambridge, Ontario, Canada

Measurements Taken By: Andrew Lanesmith, PEng. - Energy Systems Specialist. M. Div.

The HFG (Hot Flue Gas) eliminator was installed at the OPSEU condominium complex located in Cambridge, Ontario Canada. The HFG Eliminator was installed to recover energy from the heating and hot water boiler's flue gas exhaust. The recovered energy is used to preheat cold water make-up to the building's hot water supply, and to preheat air supplied to the building during colder months of the year.

The HFG Eliminator was tested in September, 2016. Temperature measurements were completed by Andrew Lanesmith, PEng. - Energy System Specialist – in September, 2016 to validate that the HFG Eliminator operates as designed.

One hot water boiler was operating when temperature measurements were taken. The hot water boiler stack vents outside through the side wall when there is no demand for energy recovery. When there is a demand to recover energy from the boiler stack flue gas, an actuator opens a damper, allowing the hot flue gas to be drawn through the HFG Eliminator. Energy from the flue gas is transferred via a heat exchanger to a glycol loop which conveys the heat to a second heat exchanger. The second heat exchanger preheats the cold City water which is required as make-up water for the domestic hot water supply.



Ambient temperature coming from the boiler flue gas. Those in attendance put their hands in the 84.6F flue gas exhaust while the boilers were operating.

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DESCRIPTION OF BUILDING SYSTEMS

The building is equipped with:

- **A domestic hot water loop for hot water consumption.**
- **A hydronic hot water loop for building heating.**
- **A make-up air unit to provide fresh air to each floor of the building.**

The hot water loops include four hot water storage tanks. The water in the storage tanks is maintained at the design hot water temperature by circulating the stored water through two hot water boilers. When the hot water temperature in the storage tanks drops below the low temperature set point, the hot water boilers turn on to raise the temperature of the hot water to the high temperature set point. City water make-up is supplied to the hot water storage tanks based on the demand for domestic hot water.

The make-up air unit is designed to heat cold, make-up air during the heating season. The heating system consists of an indirect fired natural gas burner.

DESCRIPTION OF ENERGY RECOVERY SYSTEM

At this site, four hot water boilers maintain the design temperatures of the two hot water loops – domestic hot water and heating. Each boiler has an exhaust stack that vents to a 6 inch energy recovery plenum.

Demand for energy optimization is created when:

- The domestic hot water supply calls for city water make-up, and/or
- The outside air temperature drops below a set point, creating a demand to preheat building make-up air.

Ducting from each boiler exhaust stack tees into a main header. The main header is ducted to the HFG Eliminator.

During the validation measurements, the side wall vents for each of the boilers were monitored by a digital thermometer as well as physically felt by holding a hand in the exhaust vents. The temperature recorded and felt was similar to the outside ambient air temperature. This observation indicated that the actuator controlled dampers were operating properly.



Property Value Increase

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Property Value Increase – Green Buildings

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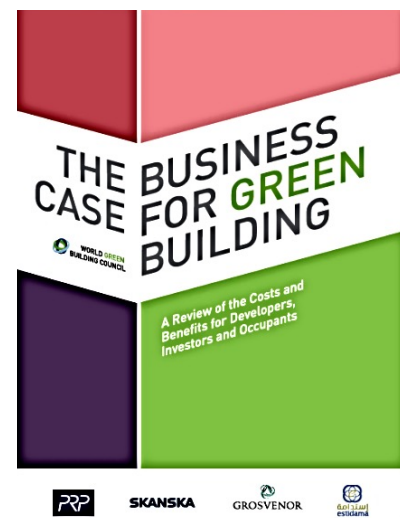
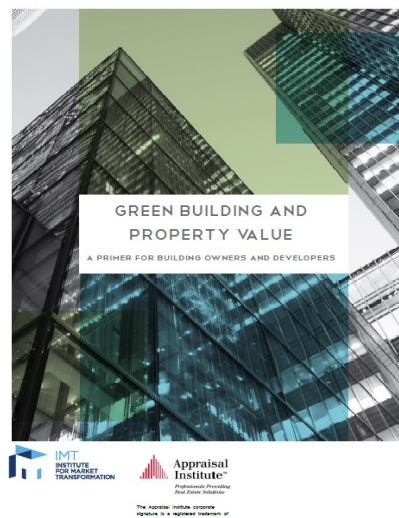
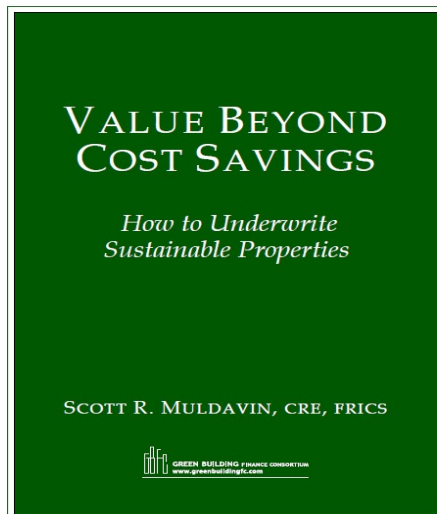
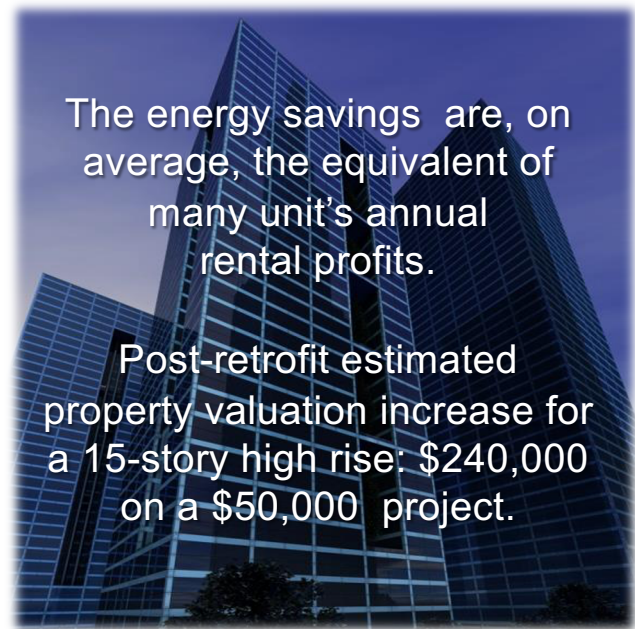
Increased Property Valuation As a Result

As investors and occupants become more knowledgeable about and concerned with the environmental and social impacts of the built environment, buildings with better sustainability credentials enjoy increased marketability.

Studies around the world show a pattern of green buildings being able to more easily attract tenants and to command higher rents and sale prices.

- WORLD GREEN BUILDING COUNCIL
- US Green Building Council
- Canada Green Building Council
- Leadership in Energy and Environmental Design (LEED)

Moving beyond the value that accrues to owners from rents, operational savings, and market recognition at sale, these guides will help building owners and developers understand the appraisal process and how green, high performance characteristics and data can be used by appraisers to help fully maximize increased property valuation due to energy retrofits.



NEXT STEPS

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If this is a project that inspires, these are the

Next Steps

1. A signed mutual non disclosure agreement due to the unique trade secrets associated with the HFG energy system.
2. Financial review of heating, water and ventilation costs in order to provide an effective savings estimate.
3. Technical systems review of existing boilers, piping, valving, electrical, controls etc.
4. Drawings of the proposed system - review with building owner and property manager.
5. Site meeting(s) with contractor(s). Obtain quotations for installation.
6. Write specification of installation and project management requirements.

The above will require \$5,000 (\$3,000 with issue of a Purchase Order) with the remaining due upon completion of this stage. This fee will become part of the overall project. Enbridge incentives will cover a portion of this. If agreeable, I will issue a document itemizing the above to base the PO upon and begin as soon as the PO and cheque is issued.

I look forward to bringing this significant energy/environmental project to 20 Barrel Yards.



James P. Moore