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La Commission des services électriques de Montréal **fête ses 100 ans !**

À LIRE DANS CE NUMÉRO :

- Réduction des gaz à effet de serre : la Cité de Dorval relève le défi
- Le programme de formation de l'automne 2010 est disponible

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**« Réduction des gaz à effet de serre: la Cité de Dorval relève le défi »
The following is the English version of the French article by Peter Romaniuk:
appearing in Volume 18 – Number 2 – Summer 2010 of the Association
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Reducing Greenhouse Gas Emissions!

The City of Dorval Meets the Challenge...

Reducing Greenhouse Gas emissions is everyone's concern. Can municipalities deal with this issue and save taxpayer dollars at the same time?

Now they can with an innovative new clean technology, the HTX-EnerG™ System developed by a Montreal-based company, HyTronX Corporation.

Climate change, global warming and reducing air pollution are pressing topics. The public is demanding action from corporations and governments alike. Legislators have a duty to improve air quality by decreasing toxic Greenhouse Gases. Through policies and programs, governments are now displaying tangible efforts and measurable actions.

At the municipal level, fleet managers are searching for cost-effective ways to reduce their carbon footprint to ensure their community is *Going Green*, and have successfully attained their environmental targets. A tall order, indeed!

Erratic fuel costs only make matters worse. We remember the summer of 2008 when prices soared to record heights. No one doubts those high fuel prices will return. The only question is when?

HyTronX Corporation is working hard to curtail these ecological and fiscal concerns. Our patent-pending hydrogen-injection technology, the HTX-EnerG™ System improves the environment by reducing Greenhouse Gas emissions from vehicle exhaust, thus attacking the problem right at the source where the GHG emissions are formed directly in the combustion chamber. This system also reduces fuel consumption when retrofitted onto vehicles powered by internal combustion engines. A dual solution for a tough problem!

The HTX-EnerG™ System generates hydrogen and oxygen gases directly on board a vehicle, strictly on demand and only when the engine is running. This key feature completely eliminates the use of hazardous on-board hydrogen storage tanks and the need for an expensive nation-wide hydrogen filling station infrastructure.

Installation is simple and only takes a couple of hours, with no modifications to the engine. The HTX-EnerG™ is scalable and adaptable to all vehicles. Production efforts are currently focused on Class 1 to 6 vehicles (autos, light and medium duty trucks & vans). A Class 7 and 8 (tractor trailers and buses) unit is in the final R&D stage.

HTX-EnerG™ Unit appears in top right-hand corner of this picture



(Courtesy of the City of Dorval)

The Ontario Ministry of Transport has recognized hydrogen-injection technology through its Green Commercial Vehicle Program (GCVP) by offering subsidies to commercial entities opting to retrofit their vehicles. Hydrogen-injection is acknowledged as an acceptable alternative technology.

The City of Dorval is actively leading the way by implementing the practical use of hydrogen. By working closely with HyTronX and installing HTX-EnerG™ units onto two of their utility vehicles, Dorval has taken a concrete stand against air pollution.

HyTronX applies rigorous field trial protocols requiring pre-installation emissions inspection testing performed by an Ontario Drive Clean Centre to officially record and establish a vehicle emissions baseline. Furthermore, the ascertaining of a precise, real-time fuel consumption baseline is required, determined by using the actual vehicle fuel reports provided by the municipality. It was requested that Dorval provide their most challenging vehicles for testing. And so they did!

NOTE: All data used in this article were taken directly from Dorval's reports, have been verified by City of Dorval management and are deemed to be true and accurate.

Vehicle One

2008 Chevrolet C1500 Silverado Modified Pick-Up Truck (4.3L- 6 Cyl)

Pre-installation Observations

This “stop and go” vehicle travels approximately 300 kilometres weekly and is employed in daily maintenance tasks. Vehicle One idles for long periods of time during its workday, consuming high amounts of fuel for very low mileage.

On the preliminary vehicle profile, the driver reported that the truck shook continually in idle mode, emitted very strong exhaust odours and visible blue smoke. Its catalytic converter was also slated for replacement. Moreover, the vehicle was reported as being particularly sluggish with no pep.

Fuel Consumption

Determined from fuel fill-up data provided on the Rapports Journaliers.

Baseline Calculation

Date Filled (M/D/Y)	Odometer Reading	Quantity Litres	Actual Litres per 100 Kms	Average Litres per 100km	Average Variance % (+ /-) Under BASELINE
01/14/10	34,094	<i>Maximum Fill-up To Start</i>	<i>No Data Required</i>		
01/15/10	34,210	27.00	23.28		
01/22/10	34,530	82.70	25.84		
01/28/10	34,971	104.10	23.61		
02/03/10	35,414	110.10	24.85		
BASELINE				24.39	

(Figure 1)

Actual Fuel Consumption

Unit #	Date (M/D/Y)	Report Period	Fuel Consumption (L/100km)	Change Per Baseline
1708	02/03/10	Baseline	24.39	NA
1708	02/25/10	1 st Report	20.78	-14.81%
1708	03/26/10	2 nd Report	22.98	-5.77%
1708	06/07/10	3 rd Report	23.28	- 4.56%
Average			22.35	- 8.38%

(Figure 2)

Note: At idle, a 4.3 litre engine consumes 3.79 litres of fuel every two hours

The HTX-EnerG™ System was installed on February 24, 2010. Post-baseline readings, using weekly fill-up reports, began on February 25, 2010 and were continually monitored to June 7, 2010. Under normal operations, this vehicle showed fuel savings of 8.38% during the trial period.

NOTE: The month of April and part of May showed fuel fill-up records that included a second motor used to run the pressurized cleaning equipment attached to the vehicle for the annual spring cleanup. Those fuel fill-ups were added to the regular fill-ups of the vehicle and recorded together as one in Dorval's report which compromised the readings for actual vehicle fuel usage thus rendering the data unusable.

Greenhouse Gas Emissions

Vehicle One was initially tested for the "concentration level" of Greenhouse Gas emissions at an Ontario Drive Clean Centre, February 24, 2010, prior to the activation of the HTX-EnerG™ System. The vehicle was then retested on May 28 after the system had been operational for over three months. (See comparisons in Figure 3)



(Photo Courtesy of the City of Dorval)

(*Before Activation = Feb 24, 2010 / After Activation = May 28, 2010*)

ONTARIO CLEAN DRIVE INSPECTION REPORTS						
GHG	@ 40km/h			@ CURB IDLE		
	Before	After	% Var	Before	After	% Var
HC ppm	8	8	0%	7	7	0%
CO%	0.06	0.01	- 83%	0.06	0.1	+ 67%
NO ppm	1	0	- 100%	N/A	N/A	N/A

(Figure 3)

Observations & Analysis

The first Ontario Drive Clean Inspection reported a problem with the emission control system advising it should be “checked/repaired”. The ODC technician advised it was the catalytic converter. HyTronX specifically requested that the City of Dorval refrain from replacing this part or any others prior to the completion of the field trials.

ODC inspection data measures concentration levels of three specific gases, *Hydrocarbon (HC)*, *Nitrous Oxide (NO)* and *Carbon Monoxide (CO)* exhausting from a vehicle tailpipe.

Observation 1: The May 28 ODC report no longer indicated an emissions control equipment malfunction, signifying that the catalytic converter would not need replacement, generating a savings of over \$1,200 for the City of Dorval.

Observation 2: On the 40 km/h test, the ODC reports showed a 100% reduction of NO ppm emissions as well as an 83% reduction in CO. Though a 67% increase in CO appears for the CURB IDLE test due to above-average vehicle idle time, net overall results still attest to a solid combined reduction of 16% in CO emissions after only three months with the HTX-EnerG™ System.

Observation 3: Reductions in emissions are measured by volume and directly correlated to the percentage reduction of fuel consumption. Such decreases were observed at various times during the trial period.

Vehicle Performance

From the moment the unit was activated and throughout the entire field trial period, the driver consistently reported to management that Vehicle One had ceased sputtering and shaking when in idle mode. He also attested to the fact that the truck now rode more smoothly, had increased pep and that the offensive blue smoke and tailpipe odour had since vanished.

Summary

Vehicle One’s overall performance has markedly improved on every level. This field trial period confirms that with the retrofitting of the HTX-EnerG™ hydrogen injection system, the engine has been purged of its carbon build-up, burns cleaner and cooler, plus has increased torque and horsepower. With a cleaner engine, the life of the vehicle is extended, maintenance costs lowered and fewer oil changes required.

Reductions ranging from 4.56% to up to as much as 14.81% in decreased fuel consumption as well as equivalent emissions reductions were witnessed at various times during the trial period. However, due to the typical “stop and go” city driving and above average idling time, this vehicle demonstrated an average emission reduction of 8.38% based on volume.

Vehicle Two

2009 Chevrolet Uplander LS Van (3.9 L / 6 Cyl)

Pre-installation Observations

Vehicle Two is Dorval’s security vehicle, on the road 20 hours per day, seven days a week, averaging approximately 260 kilometres daily with partial idle time when stopped for emergencies. This vehicle was specifically selected for its very high daily mileage consisting completely of "stop and go" city driving, easily the most challenging vehicle in determining fuel consumption.



(Photo Courtesy of the City of Dorval)

Fuel Consumption

Determined from fuel fill-up data provided on the Rapports Journaliers. Bibliothèque

Baseline Calculation

Date Filled (M/D/Y)	Odometer Reading	Quantity Litres	Actual Litres per 100 Kms	Average Litres per 100km	Average Variance % (+ /-) Under BASELINE
12/23/09	56,795	Maximum Fill-up To Start	No Data Required		
12/31/09	58,438	254.40	15.90		
01/31/10	64,950	917.80	16.57		
02/28/10	70,899	947.00	15.95		
BASELINE				16.14	

(Figure 4)

Actual Fuel Consumption

Unit #	Date (M/D/Y)	Report Period	Fuel Consumption (L/100km)	Change Per B/L
9309	02/28/10	Baseline	16.14	NA
9309	05/31/10	1 st Report	15.40	-4.60%
9309	06/20/10	2 nd Report	15.54	-3.69%
AVERAGE			15.47	-4.15%

(Figure 5)

The HTX-EnerG™ System was installed and activated on April 28, 2010. Post-baseline readings, using daily fill-up reports, began on April 28, 2010 and continually monitored to June 20, 2010. During this ongoing trial period, an average fuel saving of 4.15% has been achieved to date.



(Photo Courtesy of the City of Dorval)

Greenhouse Gas Emissions

Ontario Drive Clean Inspection Report:

Prior to activation of the HTX-EnerG™ System (April 28, 2010)

ONTARIO CLEAN DRIVE INSPECTION REPORTS						
GHG	@ 40km/h			@ CURB IDLE		
	Before	After	% Var	Before	After	% Var
HC ppm	6	TBD	TBD	6	TBD	TBD
CO%	0.02	TBD	TBD	0.01	TBD	TBD
NO ppm	0	TBD	TBD	N/A	TBD	TBD

(Figure 6)

The ODC post-installation inspection is slated to be done in July 2010.

Observations & Analysis

While a conclusion on the “concentration” levels of the measured gases will not be available until July, we can project that the “volume” of Greenhouse Gas emissions should be reduced based on a continuing trend in the reduction of fuel consumption. This alone would qualify the City of Dorval for future carbon credits.

NOTE: On June 15, 2010, Premiers Jean Charest and Dalton McGuinty announced the formation of a Cap & Trade System for carbon credits. This would allow municipalities to be financially compensated in the future based on the outcome of their efforts to reduce their Greenhouse Gas emissions.

In Conclusion

Dorval is the first municipality to authorize HyTronX to perform field trials using our hydrogen-injection technology. We are very confident that the municipality has met its original objectives of reducing toxic greenhouse gas emissions, while lowering fuel consumption and related maintenance costs.

Municipal vehicles in urban areas such as Dorval drive shorter distances, however, municipalities in rural areas would have greater highway driving distances which would translate into in a higher percentage of fuel savings.

We would like to thank the Mayor of Dorval, Mr. Edgar Rouleau, for his foresight in partnering with HyTronX Corporation on this clean technology project. We also extend our appreciation to Carl Minville (Director, Public Works) and Daniel Bilodeau (Foreman, Garage, Public Works) for their professionalism and full cooperation throughout the trials.

HyTronX Corporation welcomes all inquiries with regards to our hydrogen-injection process. The HTX-EnerG™ System is a viable option, available now, for urban and rural municipalities seeking to make their communities cleaner and healthier places to live and work.



Peter Romaniuk
President

BIOGRAPHY

Peter Romaniuk is an entrepreneur turned environmentalist. The HTX-EnerG™ System is as a result of his concern for the planet and what legacy will be left to the next generation. As inventor, he holds several patents-pending on this hydrogen-injection system and is now ready to go to market. Based in Montreal, Peter's goal is to position this Made-in-Quebec clean tech device at the forefront of the battle against air pollution and climate change.

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