

**Letter #1 – Mike Simpson Transportation Analyst Rocky Mountain Institute**

From: Mike Simpson <msimpson@rmi.org>  
Subject: Re: Students Draft Report and TM4 Video  
To: "Thane C. Heins" <thane\_heins@yahoo.ca>  
Received: Monday, January 25, 2010, 11:12 AM  
Mr. Heins,

Thank you for sending these additional details. We've had our internal physics experts review this information and have determined that it is very interesting work. We are eager to understand the market implications, *i.e.*, the commercialized cost of the additional efficiency of this type of generator.

All the best,

Mike Simpson  
Transportation Analyst  
Rocky Mountain Institute  
1.303.567.8652 (office)  
1.720.236.0295 (cell)  
[move.rmi.org](http://move.rmi.org)

-----Original Message-----

**Letter #2 – US Air Force Energy & Environmental Quality Research Laboratory**

From: Mendoza, Omar Civ USAF AFMC AFRL/RXSC  
[mailto:[Omar.Mendoza@WPAFB.AF.MIL](mailto:Omar.Mendoza@WPAFB.AF.MIL)]  
Sent: Thursday, August 27, 2009 2:53 PM  
To: Chris Napier VP Business Development Potential Difference Inc  
Cc: Spicer, Malory E Civ USAF AFMC AFRL/RXSC  
Subject: RE: RE: Potential Difference Inc Technology Introduction & Invitation

Hi Chris,  
I will get authorization to travel within the next day or so. Please stand by.

Also, by all the data you are showing, it seems to me that you are hung up on trying to "convince" college professors of the validity. Our approach is much different, we look at the perspective of, "how can it be advance to the next level and what are the potential applications".

I look forward to working with you and finding the path for this technology.

Best regards,

Omar Mendoza, Program Manager  
Energy & Environmental Quality  
Air Force Research Laboratory  
Wright Patterson AFB Ohio 45433  
(937) 255-2247

**Letter #3 – US Air Force Energy & Environmental Quality Research Laboratory**

--- On **Mon**, 11/2/09, Mendoza, Omar Civ USAF AFMC AFRL/RXSC :  
From: Mendoza, Omar Civ USAF AFMC AFRL/RXSC  
Subject: RE: Consulting PhD Request - Regenerative Acceleration Technology  
To: "Thane C. Heins" <thane\_heins@yahoo.ca>, Dave\_Pascoe@magna.on.ca,  
gregory\_kardasz@magna.on.ca  
Cc: rhabash@site.uottawa.ca, "Tyler Hamilton" <thamilton@thestar.ca>  
Received: Monday, November 2, 2009, 11:42 AM

Hi Thane,

We really are more interested in developing its use and application for military power requirements rather than understanding it (We'll leave that to the smarter folks...in general, we still can't explain simple "magnetism", we just know what it does and we use it. If we had to explain it, we'd still be debating it).

I believe my support contractor CTC is waiting for torque data to determine what the scale up would look like.

Best regards,

Omar Mendoza, Program Manager  
Energy & Environmental Quality  
Air Force Research Laboratory  
Wright Patterson AFB Ohio 45433  
(937) 255-2247 (937) 255-2247

**Letter #4 - Canadian Association for the Advancement of Science**

From: "CANADIAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE" David Mann  
<david.m5561@gmail.com>  
Subject: Electric Vehicle Regenerative Acceleration Technology  
To: thane\_heins@yahoo.ca  
Cc: "Olga Barrat" <obarrat@telus.net>  
Received: Wednesday, November 4, 2009, 3:28 PM

Dear Thane,

Thane, I was too late reading this E-mail, my apologies. I would still like to see what you are doing and perhaps we can include some of your material on our website newsletter?  
The following is an E-mail I received from Dr. Olga Barrat (CAAS). I am the Ontario representative of CAAS and if possible would like to meet with you to discuss your approach to the Association and of course to get a better feel about the physics behind your invention. I live in Ottawa and you can call me on 613-741-5063 or 613-741-5063 .

David Mann

**Letter #5 – Canadian Space Agency**

**From:** Gilles.Leclerc@asc-csa.gc.ca [mailto:Gilles.Leclerc@asc-csa.gc.ca]  
**Sent:** Tuesday, November 03, 2009 7:19 PM  
**To:** chris.hadfield-1@nasa.gov; napior@rogers.com  
**Cc:** Chris.Hadfield@asc-csa.gc.ca; Gilles.Brassard@asc-csa.gc.ca  
**Subject:** Re: Potential Difference Inc - Lab Data etc.

Dear Mr. Napior,  
I have asked Mr. Gilles Brassard, A/Director, Spacecraft Payload here at the Canadian Space Agency to look at your technologies and to visit your laboratory.  
Best,  
-GL

Gilles Leclerc  
DG Space Technologies - Technologies spatiales  
Canadian Space Agency - Agence spatiale canadienne

**Letter #6 NASA –Goddard Space Flight Center Invitation**

Subject: re: previous phone call  
From: "Erik Clark" <[eclark@cne-mail.gsfc.nasa.gov](mailto:eclark@cne-mail.gsfc.nasa.gov)>  
Date: Tue, February 12, 2008 8:48 am  
To: "Dr. Habash University of Ottawa Professor" [rhabash@site.uottawa.ca](mailto:rhabash@site.uottawa.ca)  
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Riadh,

I had contacted you this previous Saturday about trying to procure an abstract on the work you are doing with Thane Heins. The magnetics lab here at Goddard expressed some interest in having you come down to do a colloquium, but would like to get an abstract on the work done so far before moving ahead. Let me know when you could provide this, so we can look at possibilities moving forward.

--

Erik Clark  
NASA-Goddard Space Flight Center  
Bldg 18 Room 200 Mailstop 730.0  
Greenbelt, MD 20771  
alt email: [eclark@cne-mail.gsfc.nasa.gov](mailto:eclark@cne-mail.gsfc.nasa.gov)

**Letter #7 Electric Mobility Canada Letter**

From: Al Cormier <al.cormier@emc-mec.ca>  
Subject: RE: Mike Elwood Regenerative Acceleration Demonstration and Comments  
To: "Thane C. Heins" <thane\_heins@yahoo.ca>  
Cc: melwood@azuredynamics.com, sdallas@torontoelectric.com, tsmolinski@hydro.mb.ca  
Received: Thursday, November 19, 2009, 7:15 AM

Good morning Mr. Heins,

I am pleased to advise that our Board of Directors has asked our Technology and Energy Development Committee to be the vehicle to comment on emerging technologies. The Chair of the Committee is agreeable to this mandate change. How this new process will evolve is yet to be determined but I am writing to ask you to submit what you feel would be an appropriate document to describe your regenerative acceleration technology for circulation to our Committee members.

Regards



Al Cormier, CAE/c.a.é.  
Executive Director / Directeur général  
Electric Mobility Canada – Mobilité électrique Canada  
Suite 309, 9-6975 Meadowvale Town Centre Circle  
Mississauga, ON L5N 2V7, Canada  
Tel: 416 970 9242  
Fax: 905 858 9291  
Email/Courriel: [al.cormier@emc-mec.ca](mailto:al.cormier@emc-mec.ca)  
Web site/site web: [www.emc-mec.ca](http://www.emc-mec.ca)

**Letter #8 Professional Engineers of Ontario - Ontario Centre for Engineering and Public Policy**

--- On **Sun, 10/11/09, Donald Wallace (OCEPP)** <[dwallace@ocepp.ca](mailto:dwallace@ocepp.ca)> wrote:

From: Donald Wallace (OCEPP) <[dwallace@ocepp.ca](mailto:dwallace@ocepp.ca)>  
Subject: Video Data - DND-NRC/DEW Engineering Lab Demo October 6th, 2009  
To: "Thane C. Heins" <thane\_heins@yahoo.ca>  
Received: Sunday, October 11, 2009, 1:53 PM

Thanks, Thane. Both videos are very interesting. Are you familiar with the Centre's *Journal of Policy Engagement*? (If not, you can check it out on our website.) Would you be willing to contribute an article on this technology to the Journal? Cheers, Donald.

Donald Wallace  
Executive Director  
Ontario Centre for Engineering and Public Policy  
25 Sheppard Avenue West, Suite 1000  
Toronto, Ontario M2N 6S9

416-840-1078  
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**Letter #9 & 10Dr. Stanley Townsend U of T**

From: "Stan Townsend" <[s.townsend@utoronto.ca](mailto:s.townsend@utoronto.ca)>  
To: <[kimdcunningham@yahoo.ca](mailto:kimdcunningham@yahoo.ca)>  
Subject: Regenerative Acceleration Technology

Date: Tue, 22 May 2007 13:23:32 -0400

Kim:

Your Press Release was most interesting to me as a physicist & an engineer. The level of technical detail was adequate to tell me that you probably have made a very significant advance in applied physics & in safely & successfully handling a new source of electric power. Congratulations!

You have almost certainly already applied to the USPTO for a patent application, and you will probably have had your patent application security classified. C'est la vie. :-)

I have taken the liberty of forwarding a blind copy of this e-mail to you on to a physicist friend who might contact you further. You will find him to be highly technically knowledgeable in what you are doing, but you will also find him highly ethical in advising you & helping you to move forward within this newly developing technical community.

Stay out of the limelight, and ignore any critical skeptics - don't let your energy get tied up in responding. Develop the new technology - it will market itself - you do not have to persuade skeptics.

I am in Ottawa on June 22 P.M. & the 23rd, visiting my son at [www.c3i.ca](http://www.c3i.ca) , and may arrange to visit you if possible.

All best wishes for technical & business success - I agree with Thane Heins leadership approach.

Stanley J. Townsend, Ph.D., P.Eng.

--- Stan Townsend <[s.townsend@utoronto.ca](mailto:s.townsend@utoronto.ca)> wrote:

From: "Stan Townsend" <[s.townsend@utoronto.ca](mailto:s.townsend@utoronto.ca)>  
To: "TCH.PotentialDifference"  
<[thane\\_heins@yahoo.ca](mailto:thane_heins@yahoo.ca)>  
Subject: Regenerative Acceleration Technology.  
Date: Sun, 27 May 2007 20:29:43 -0400

Dear Thane:

Thank you for your kind reply. My words will have been well deserved by you as the inventor (I'm equating Founder to Inventor - right?)

It is not easy trying to do what you seem to have done. If you run into problems trying to "square your results" with the Conservation of Energy Rule, Let us talk about that, because I might be able to help you with that. I think that you have accomplished what you seem to have accomplished, but your "reconciliation" with present day physics "might not be taking everything into account." There is something that you might not yet be able to explain in simple physics/EE knowing.

One of my past tasks (enjoyable, even at that!!) was to spend 8 years as Managing Editor of the Canadian Journal of Physics whilst it was on the campus of York University, under the leadership of Dr. Ralph Nicholls, Editor, one of Canada's pre-eminent physicists.

I am well versed in the range of variation in the way that various physicists choose their perspective of how to support or disagree with apparently-debatable experimental physics. AND, if you have multiples greater than 100%, You ARE in the realm of physics, and not of electrical engineering – and there is a big difference.

DO NOT STUMBLE ON THE PHYSICS OF WHAT YOU HAVE DONE!! Do Not explain the physics - stay with explaining ONLY the electrical POWER measurements - it will keep you out of a lot of media trouble.

As a general rule, I would caution you to stay with the general approach of describing your experimental measurements on the functionality of what you have discovered, developed, and are currently experimental witnesses to. As for me, I would always retreat to the reality of what you are experiencing in the functional operation of the three variants of your discovery. Be very careful indeed of whether or not you want to equate conservation of energy to your input-output measurements - go with your measurements as they are, and stick to their explanation of energy out divided by energy in - and let the percentage efficiency results and the observations fall where they may.

My hunch is that you might yet not be able to measure the source of the "extra energy" being entrained into your output - DO NOT ACCEPT THE BURDEN OF TRYING TO EXPLAIN THE WHY OF "WHERE" "THE-GREATER-THAN-100%-EFFICIENCY" COMES FROM ---- EXPLAIN ONLY THE RESULTS OF THE MEASUREMENTS THAT YOU DO OF THE COMPOUND OUTPUT!!

DEFER ANY DEFENSE OF THE SOURCE OF THE EXTRA ENERGY "ENTRAINED" BY THE INPUT - YOU "MIGHT NOT BE ABLE TO EXPLAIN THE SOURCE AT THIS POINT IN TIME!!"

DO NOT SAY EVEN THIS - SAY ONLY THAT YOU ARE WORKING TO IDENTIFY THE NEW SOURCE --- END OF STORY!!

Regards, Stan

Stanley J. Townsend, Ph.D., P.Eng.

**Letter #11 Russian Academy of Science Letter**

From: Евстигнеев Николай <EvstigneevNM@yandex.ru>

Subject: Some questions about your great work in electrodynamics

To: thane\_heins@yahoo.ca

Received: Wednesday, January 27, 2010, 2:08 PM

Hello dear Thane!

My name is Nick; I'm doctor in mathematics working in the field of partial differential equations and chaotic dynamics. I'm very interested in what you are doing with your experiments, because from the mathematical point of view what's going on in your experiments is the break of SO3 symmetry in fundamental tensor of Yang Mills equations that makes it obvious to see the flaws in Maxwell electrodynamics. There are some questions about your great experimental work. I would be delighted if you take some time to answer those. These questions might be lame for I'm not too good in electro techniques and a very poor engineer, so please don't judge me too hard.

The questions are:

1. In your experimental work with Multi Coil Stators that are self-accelerating is the acceleration constant ( $a=\text{constant}$ ) or does it stop when a certain rotation speed is achieved?

In our observations so far the acceleration stops when a certain rotational speed is reached. However if the parameters of the coil are changed (i.e. increasing the wire gauge) the acceleration can be made to continue. Each coil has an ideal operating range or window of operation.

2. Is there a correlation between frequency (rotation velocity) and the number of turns in your accelerating high voltage coils, core material or its impedance?

The acceleration is based on **frequency dependant impedance**. Coil impedance is a function of frequency where:

$$X_L = 2\pi fL$$

$$Z_L = 2\pi fL + RDC$$

As the frequency increases (rotor RPM) the impedance of the coil also increases so its current carrying capacity decreases accordingly. As the coil's ability to carry current decreases the coil's (Lenz induced) repelling magnetic field also decreases while at the same time the coil's induced voltage is increasing.

When the magnet is TDC (top dead centre) to the coil (neither approaching nor receding) the coil impedance drops to the DC resistance of the coil and the self induced voltage is maximum. The high voltage is then able to be dissipated through the small DC resistance of the coil – producing a delayed magnetic field which pushes away on the now receding magnet while at the same time attracting the next opposite magnet pole on the rotor.

**If the Self Accelerating coil is engaged at a rotor speed where current can flow in the coil (because the frequency is low) – then the coil acts like any conventional coil and produces a repelling magnetic field as per Lenz's Law.**

3. In bi-toroid transformer you have a central coil on a high reluctance flux core and two bifilar coils with serial connection on low reluctance flux cores (low resistance), right? Can you make these coils of a thick wire or those coils are supposed to be made of a thin wire with high impedance (Z)?

The Primary Coil of the Bi-Toroid Transformer is set on a variable “high reluctance” flux path core. By variable we mean that the reluctance of the primary core leg is a function of primary coil impedance and the magnitude of flux flowing in the primary coil core. The physical size of the primary core leg is also much smaller than the secondary core legs to ensure that the primary core with its large flux in a small area produces the maximum reluctance – operating at very close to saturation – therefore inhibiting secondary induced flux from entering the primary core and encouraging secondary induced flux to stay in the lower reluctance outer flux path route.

The primary coil impedance plays a role in disallowing secondary induced flux from coupling back through the primary core – while at the same time the higher gauge (low impedance) wire employed in the secondary windings represents a lower reluctance flux path route for secondary induced flux once again encouraging the secondary flux to stay away from the primary and follow the path of least reluctance in the outer flux path ring.

4. Is there a resistance on a rotating ferromagnetic disk with spaces in your project with stationary magnets and coils when the load on the coils is on? Are those coils made of thick wire or of thing like the high voltage coils in your Multi Coil project?

There is some initial resistance due to the eddy current losses and hysteresis losses associated with the disk but the coil induced magnetic field has no declarative impact on the speed of rotation of the disk in fact it even accelerates a little when the coils are loaded probably because we are increasing the induction motor’s rotor flux magnitude. The coils employed are low gauge high current carrying wire which produce a maximum induced magnetic field.

Thank you very much in advance!

Yours truly, Nick.

Dr. Evstigneev N.M., leading sc., dep. of chaotic dynamics, Institute for System analysis, Russian Academy of Science.

I hope this answers your questions.

Best wishes

Thane.

## **Part 2 Russian Academy of Science**

--- On **Fri, 1/29/10**, **Евстигнеев Николай** <[EvstigneevNM@yandex.ru](mailto:EvstigneevNM@yandex.ru)> wrote:

From: Евстигнеев Николай <[EvstigneevNM@yandex.ru](mailto:EvstigneevNM@yandex.ru)>

Subject: Re: Russian Academy of Science - Questions Answered

To: "Thane C. Heins" <[thane\\_heins@yahoo.ca](mailto:thane_heins@yahoo.ca)>

Received: Friday, January 29, 2010, 10:42 AM

Dear Thane!

Thank you very much for the detailed answers you provided! Number of your experiments (Multi Coil Stators and bi-toroid transformer) **are not lying in the field fo Maxwellian electrodyamics**. Today I made a numerical simulation of a model problem – simulation of the Ampere’s force on the coil from the moving permanent magnet using Maxwell set of equations with bias currents in conductors. I changed number of turns in the “coil” and varied magnetic and electric properties of coil material to get the equivalent of high R and Z. In the simulation there are no effects that you have in experiments – in the simulation there’s a direct Lenz law as its stated

by the physics. **That is fascinating!** I will inform you on any progress that i'll make along with reports.

Thank you once again!

Yours truly, Nick

--- On **Fri, 1/29/10, Thane C. Heins <thane\_heins@yahoo.ca>** wrote:

From: Thane C. Heins <thane\_heins@yahoo.ca>  
Subject: Re: Russian Academy of Science - Part 2  
To: "Евстигнеев Николай" <EvstigneevNM@yandex.ru>  
Received: Friday, January 29, 2010, 2:17 PM

Dear Nick,

The R (DC resistance) should be low (50 ohms) but the Z (frequency dependent impedance) should be high. You have to create a scenario where the inductor acts like a capacitor (storing energy in electrostatic field NOT the electromagnetic field).

The accelerating coils in this video:

<http://www.youtube.com/user/ThaneCHeins#p/u/0/RC06V8vXUqI>

employ bifilar windings because the bifilar coil in this configuration has increased self-capacitance, which is a key component for acceleration. The frequency is about 400 Hz.

See Bifilar coil here:

[http://en.wikipedia.org/wiki/Bifilar\\_coil](http://en.wikipedia.org/wiki/Bifilar_coil)

Cheers  
Thane

Thane C. Heins  
President - **Potential +/- Difference Inc.**  
613.795.1602

"An important scientific innovation rarely makes its way by gradually winning over and converting its opponents: What does happen is that the opponents gradually die out." - Max Planck

**Letter 12 – Mike Simpson Transportation Analyst Rocky Mountain Institute**

From: Mike Simpson <msimpson@rmi.org>  
Subject: Re: Students Draft Report and TM4 Video  
To: "Thane C. Heins" <thane\_heins@yahoo.ca>  
Received: Monday, January 25, 2010, 11:12 AM  
Mr. Heins,

Thank you for sending these additional details. We've had our internal physics experts review this information and have determined that it is very interesting work. We are eager to understand the market implications, *i.e.*, the commercialized cost of the additional efficiency of this type of generator.

All the best,

Mike Simpson  
Transportation Analyst  
Rocky Mountain Institute  
1.303.567.8652 (office)  
1.720.236.0295 (cell)  
[move.rmi.org](http://move.rmi.org)

Mr. Heins,

You seem to have made an interesting discovery. We would like to understand your work.

Dear Mike,

The Dean of Engineering at the University of Ottawa invited us to continue our research here a couple of years ago and we are engaged in the (slow) process of validation. The scientific process is slower than we all would like because power engineering is not one of the U of O's research fortes. The US DOE Research facility at Oak Ridge has agreed to evaluate the technology and we are currently waiting to hear back from NREL but it is also a question of time available. Our generator technology is currently being integrated into a wind generator company's product line here at the university and we are also working on a deal to build 1100 generators for a new low income housing project in Brazil where the residents would not otherwise be able to afford electricity. We are also working with a couple of electric car manufacturers here in Canada - Magna International and TM4, to get our technology into an EV.

We do our utmost to present our claims as simply as possible and in is as much of a common sense format as possible. Unfortunately that does not translate very well in a video.

Please supply the physics equations and that govern your technology so that we may review these findings.

Quite simply we had developed over the past ten years, a generator in which the armature reaction is delayed. I prefer the word developed rather than discovered, because "discovered" does not do justice to the labour that has been involved to get us to this point. Please find enclosed an article which is being prepared for the Professional Engineers of Ontario which attempts to explain the physics behind our technology..

Also, does your technology violate the fundamental laws of thermodynamics?

Does it "create" energy from nothing? No it certainly does not, but what it does do is reverse the effects associated with Lenz's Law inside the generator. It strongly appears to contradict many of the laws which act as the building blocks to the law of conservation of energy.

If it doesn't, please list the sources (and absolute values) of energy inputs and outputs to the system in the video. If it does, please explain how.

Our primary research goals have always focused on reducing the armature reaction or counter-electromotive forces produced by our generator coils when a load is applied. As it turns out we have actually reversed the CEMF. As a consequence all of our tests hinge around Conventional Generator Armature Reaction (braking) versus Regenerative Acceleration Generator Armature Reaction (acceleration) **under as identical "initial" operating conditions of rotor drive shaft torque, speed and generator loading as we can make them.** The graphs and tables at the end of the ("Miracle in..." pdf document) reflect this.

The **independent variable** in all our tests is the **generator's reaction to loading - the control variable is the motor.** The motor is always the common denominator in every equation and we monitor the stator input current right down to 0.001 amps to ensure that the motor is playing a neutral role.

The Article Ontario Centre Journal of Policy Engagement should explain the how part.

As far as the Bi-Toroid Transformer is concerned I will send that information in a separate email.

Cheers & Happy New Year!  
Thane

All the best,

Mike Simpson  
Transportation Analyst  
Rocky Mountain Institute  
1.303.567.8652 (office)  
1.720.236.0295 (cell)  
[move.rmi.org](http://move.rmi.org)

On Mon, Jan 4, 2010 at 5:21 AM, Thane C. Heins <[thane\\_heins@yahoo.ca](mailto:thane_heins@yahoo.ca)> wrote:  
Dear Amory,

I would like to share some information with you concerning new clean and safe energy technologies that we are developing at our satellite lab at the University of Ottawa. The technologies were inspired by the events surrounding 9/11.

Our primary intention right now is to raise awareness concerning the potential that these technologies may represent. Only a 10% increase in worldwide conventional generator efficiency can solve the pending energy crisis. Our generator performance ranges from 200% to 4000% more output over conventional generators while using up to 40% less input energy in some cases. This kind of performance increase can have a very positive effect on reducing the effects of global warming.

In coal fired energy production this would mean 200% (or more) energy to the grid with 40% less coal used. For wind energy our generator technology has the capacity to produce over 4000% more energy from the same amount of wind energy.

One of the most important aspects of our technology is that it will allow electric vehicles to recharge their batteries while accelerating (hence the name Regenerative Acceleration) which is the opposite of regenerative braking which is currently employed in some EV's. This will make it possible for electric cars to outperform gas powered cars on every level from performance to cost of operation, which are the key factors for marketplace adoption and acceptance. Also it takes the EV battery out of the equation because our technology can reduce the battery size, weight and cost. Batteries are the most expensive part of an electric vehicle and are the achilles heel at the present time. Currently the Tesla Roadster uses close to 1000 lbs of batteries - if our technology was employed this could be reduced to about 100 lbs or less.

Regenerative Acceleration Generator Technology reverses conventional generator magnetic resistance and turns it into magnetic assistance. Our generator when supplying power to a load does not place an additional burden on the original mechanical power source, robbing it of power as do all conventional generators - in fact our generator assists the original mechanical power source and causes it to do less and less work. The more power our generator supplies to a load such as a light bulb the less effort is required externally from the source. This is a 180 degree scientific paradigm shift. Our generator once energized by the source - is self sustaining.

Basically we have created a new renaissance for humanity and a new energy paradigm whereby our generator and the source both work in harmony together rather than opposing each other as with the current conventional energy paradigm.

We even have gone one step further and have developed a solid state version of our generator which is called the Bi-Toroid Transformer which works on the same principles - where the source is unaffected by loading (supplying energy to a light bulb etc.). Because our primary source is not affected by load or load magnitude the transformer can operate at greater than 100% efficiencies. I have attached data compiled by a Canadian National Defence Scientist confirming this.

As you can imagine our technologies are met with scepticism and resistance but we are gaining new ground every day. As David Suzuki said in the 11th Hour movie, *"the bad news is - that people are very reluctant to look for the good news."*

**The technologies are:**

- 1) Self accelerating electric motor coils - an electric motor which accelerates itself without any additional external energy required.
  - a. **Video Demonstration Part 1**  
Self Accelerating Motor Technology  
<http://www.youtube.com/watch?v=KBf5XIXSvmY&feature=email>
  
- 2) Regenerative acceleration generator - an electric generator that uses the self accelerating motor technology to produce a generator with the capacity to provide power to a load and self accelerate itself. There are five working proof of concept prototypes in the lab. A retired NRC scientist tested one of these prototypes and his results showed the regenerative acceleration generator, when compared to a conventional generator under identical conditions, provided more than 230% more output power with 40% less input power required to drive the generator. (Data attached, link to video test demonstrations here).
  - a. **Video Demonstration Part 2**  
Self Accelerating Motor/Generator Technology  
<http://www.youtube.com/watch?v=ARztYvprKkA>
  
- 3) Bi-Toroid transformer - which was tested by a DRDC research scientist (data attached.)

Kind regards  
Thane

Thane C. Heins  
President - **Potential +/- Difference Inc.**  
613.795.1602  
[thaneh@potentialdifference.ca](mailto:thaneh@potentialdifference.ca)

### **Letter # 13 Motive Industries Inc, Calgary Alberta Canada**

**Thane, some feedback from my EE lead below. If you have any feedback that would be great. Thanks.**

Thanks for taking the time and for these thoughtful questions.

I read through the "Article Ontario Center Journal of Policy Engagement" and the "Miracle in 2 minutes and 26 seconds". and a few things caught my attention.

The biggest is:

One is the small amount of power claimed to be produced at these high RPM's from such large machines.

Generator output power is not a concern for us right now since we already know the technology is scalable. For simplicity of demonstration our prototypes only employ 2 or 3 coils and the magnet strength is weak as well – this is intentional. When we were at MIT they complained that we had too many coils and stronger magnets just create regenerative acceleration that is so strong that it just scares people.

**Our focus is on generator reaction to loading, Armature Reaction (Lenz's Law).** For example as little as 0.1 Watts will produce a decelerative reaction (regenerative braking) in the conventional generator. Every additional 0.1 Watt taken from the conventional generator coil will produce an additional decelerative reaction.

However 50 Watts or more from the regenerative acceleration coil under identical conditions will produce acceleration. Every additional Watt taken from the regenerative acceleration generator coil will produce an additional accelerative reaction.

The other is that the drive motor appears to maintain the same input voltage while its speed increases from 1000 RPM up to 3500 RPM.

Yes that is exactly what happens. Actually it starts at as low as 200 RPM. The heart of the regenerative acceleration generator technology is **self accelerating motor coil technology**. This means that at a fixed speed and input from the prime mover we can self accelerate the rotor and increase its kinetic energy with no increase in prime mover input.

This suggests that either the motor input voltage is not correct or the motor is not behaving normally.

True and that is precisely what I originally thought five years ago as well (when I dismantled everything including the motor right down to the bearings – looking for the “short circuit”) but we have used other induction motors, split phase motors and DC rotor wound motors and PM DC

motors all with the same effects. (The Magna Torque Testing document shows us employing a DC motor). Originally we postulated that the generator coil Back EMF induced flux was increasing the motor's rotor field strength but we later proved that to be false.

Typically every motor has a relatively constant input voltage / RPM ratio.

Yes precisely the acceleration comes from the regenerative acceleration generator coils NOT the motor.

My biggest concern right now is that most of the stuff I don't understand

No doubt the guys at MIT didn't understand it either, nor Kinectric Labs (formerly of Ontario Hydro), nor Electron Energy Corporation in Pennsylvania, Michigan State University, or Texas A & M.

When NASA invited us to go do a demonstration for their Magnetics Group two years ago, Dr. Habash – who teaches the Power Lab here at Ottawa U wouldn't go with me because he didn't understand it either.

Recently we have been invited to go to the United States Department of Energy's lab at Oak Ridge but we don't have a professor here at Ottawa U ready to go with us yet either and we won't go without one.

Five of Dr. Habash's 3<sup>rd</sup> year Engineering Students recently spent a month replicating the technology and then wrote a report – which still does not capture the entire scope of the technology. But the tide is slowly changing.

Currently Dr. Habash is introducing the technology to PhD candidates and we have a researcher who studied machines at MIT who has introduced the technology to his former professor.

We now share a lab with TRIAS Innovations who are incorporating our technology into their wind generators.

is because it isn't documented properly, and a lot of the stuff that I do understand is not correct.

No it is certainly not correct when viewed within the current paradigm of understanding. We have over 500 pages of documentation and over 40 test videos which documents the evolution of the technology here: <http://www.youtube.com/user/ThaneCHeins>

The whole idea of injecting power into the coils momentarily while the magnet is directly in front of the coil

There is absolutely NO injection of power – the coils do it all themselves they are self excited – self accelerating motor coils. This was the first question I was asked by Dr. Habash when I demonstrated the technology to him two years ago, “where are you putting the power in to drive the rotor,” the answer I am not the coils do all the work themselves.

This is why the US Air Force, NASA, and the Canadian and American Space Agencies have expressed interest in the technologies.

is very similar to the bedini motor, which is very low voltage but high speed, and very low power.

I don't know anything about Bedini so I can't comment.

The data I would like to see is:

Drive motor make and model number

The drive motor is a 1/3 HP Ryobi Induction – but the effects are equally observable with any motor including DC motors.

In every test the motor is the control variable and the generator is the independent variable. The motor is the common denominator in every scenario (and must be) otherwise the all the tests would be invalid.

Drive motor input voltage and current

Motor voltage remains unchanged during all tests. Motor current reaction increases during conventional generator loading as the motor RPM decreases because the motor's rotor / stator slip angle increases.

On the other hand motor current decreases when the regenerative acceleration coils are loaded because they cause generator rotor & motor acceleration decreasing the motor's rotor / slip angle percentage.

(plotted vs time for one loaded and unloaded rotation of the shaft)  
Drive shaft torque (plotted vs time for loaded and unloaded full rotation)

The net drive shaft torque at any steady state speed = 0 Nm

If the drive shaft RPM is increasing then the net torque is positive.  
If the drive shaft RPM is decreasing the net torque is negative.

With this in mind we always endeavor to load the regenerative acceleration generator while the RPM is decreasing – signaling that the motor supplied torque is not even enough to maintain a steady state speed.

At any identical steady state speed the conventional generator causes deceleration when loaded and the regenerative acceleration generator causes acceleration. In the Magna Torque Test document we used an induction generator (as a torque sensor) connected to the grid, driven by a DC motor to calculate the changes in drive shaft torque under; No Load, Conventional Generator Loading and Regenerative Acceleration Loading.

As you can see the drive shaft torque decreases under conventional generator loading (induction generator output decreases and speed decreases) and everything increases when the regenerative acceleration generator is engaged.

<b>Generator Loading Type</b>	<b>Induction Generator Output to the grid</b>	<b>Total Generator Output</b>	<b>Drive Shaft Speed</b>	<b>Torque</b>
<b>No Load</b>	<b>115 W</b>	<b>0 W</b>	<b>3770 RPM</b>	<b>0.291 Nm</b>
<b>Conventional Generator 7.4 W Loading</b>	<b>102 W</b>	<b>109.4 W</b>	<b>3755 RPM</b>	<b>0.26 Nm</b>
<b>Conventional &amp; Regenerative Acceleration Generator 52.3 W Loading</b>	<b>115 W</b>	<b>167.3 W</b>	<b>3773 RPM</b>	<b>0.29 Nm</b>
<b>Regenerative Acceleration Generator 44.8 W Loading</b>	<b>124 W</b>	<b>168.8 W</b>	<b>3779 RPM</b>	<b>0.31 Nm</b>
<b>Infinite Load Regenerative Acceleration Generator</b>	<b>134 W</b>	<b>134 W</b>	<b>3788 RPM</b>	<b>0.34 Nm</b>

Third party testing and set up performed by Pierre Guillimette, President of Trias Innovations.  
Date: Sept. 19th, 2009

Drive shaft position (plotted vs time for loaded and unloaded full rotation)

The drive shaft position is always identical for both the conventional generator loading and the regenerative acceleration generator loading – loaded or unloaded.

generator output voltage and current plotted for one loaded rotation

As the conventional generator decelerates the output voltage and current both drop towards zero (see NRC data enclosed).

As the regenerative acceleration generator accelerates both the output current and voltage increase (also see NRC data).

Thanks again  
Thane

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