

Proof that On-Board Brown's Gas (BG) Generation & Supplementation Works

by George Wiseman, Version March 16, 2011 (for updates <http://www.eagle-research.com/cms/node/443>)

I've compiled this whitepaper to address the main issues that 'experts', critics and skeptics have about on-board electrolyzer technologies. Please feel free to send it to anyone who thinks that on-board electrolyzer technology *can't work* **AND there is no 'PROOF'**. Also PLEASE feel free to [send me comments and updates](#) to the information presented below. *I would like this to continue to be the most accurate and authoritative 'proof of concept' document on the Internet.*

Main Issues include:

1. If it works, why aren't the automotive companies using it?

It doesn't matter, to the 'experts', that there are over 10,000 fuel saver patents; **none** of which are on the market. It doesn't matter that the current World Record for fuel economy is over **11,000 MPG**. It doesn't matter that the Government, Vehicle Manufacturers, Oil Companies, Wall Street and other Vested Interest would lose trillions of dollars if KNOWN and PROVEN energy saving technologies were universally applied. It doesn't matter that there is NO incentive for Vested Interest to apply energy saving technologies and **EVERY incentive to suppress them**. I can prove that Governments and Vehicle Manufacturers KNOW on-board BG technology works... *But ONLY they can answer the question of why they don't use it or any of the other thousands of energy saving technologies that [are suppressed](#).*

2. How do you bypass the second law of thermodynamics?

The second law is stated in a lot of ways; in this case we'll use "[you can't get more energy out than you put in](#)"... It doesn't matter, to the 'experts', that combustion is a chemical process (initially) not a thermo one; or that internal combustion characteristics are COMPLETELY different than external combustion. *What matters is a reasonable theory explaining where the 'extra' energy comes from. I present one below.*

3. If it works, then why aren't there any scientifically credible studies that prove it works?

It doesn't matter that there are thousands of user testimonials quoting gains greater than 25% (and up to 100%), on virtually every make and model of vehicle. Testimonials are not enough to influence the minds of 'experts', critics, skeptics or valid evidence for Government Agencies the Vested Interest use to suppress technologies. It doesn't matter that the reported gains are so dramatic as to be unexplainable by 'tuneups' or 'driving more carefully'. What matters is producing just **ONE credible, valid scientific study**. The 'experts', critics and skeptics say there are **NONE!** **Just ONE would be enough**; say the 'experts', critics and skeptics...

This document does NOT address using PURE hydrogen (H₂) as a [stand-alone fuel](#). I discuss **Water as Fuel** options in my [Water as Fuel books](#).

Also; I do NOT count BG systems that use on-board batteries, to provide the electricity to make enough BG to run the engine **totally on BG** (*like Denny Klein did*) as appropriate Water as Fuel technologies. Yes, batteries would allow you to create enough BG to run the engine purely on BG and yes, **internal combustion engines run GREAT on BG** ([see my BG video 2](#)); BUT if you intend to carry batteries (so you have stored electricity available anyway), you'd go **at least three times the distance** if you took out your inefficient IC engine and replaced it with efficient electric motor technology. *Using batteries to make enough H₂ or BG to fuel an IC engine is a VERY inefficient use of technology and NOT what we are addressing in this report.*

The **EXCEPTION** is to [use batteries \(charged at home\) to create on-demand, on-board BG](#) that is used **ONLY to SUPPLEMENT** the carbon-fuel. This eliminates the parasitic load on the engine and maximizes the efficiency of producing the BG ([CBC further increases efficiency](#)). **IMPORTANT!** I do NOT EVER recommend compressing BG in a tank; that is literally a **BOMB** waiting to explode. **BG must be produced on-demand (aka HOD)** so there is **NO** safety risk.

This document provides *applicable credible proof* that adding *supplemental* Brown's Gas (BG), produced *on-demand* and *on-board* the vehicle, to ordinary carbon-based fuels can improve combustion efficiency enough to reduce net fuel consumption and pollution *while maintaining full power and performance*. (Proofs start on [page 7](#))

The technique of using **hydrogen** (H₂) as a combustion initiator, stabilizer and enhancer for carbon-based fuels has been well researched and proven for many decades.

The benefits of adding H₂ to carbon-based fuels (ex: methane, propane, gasoline, diesel and crude) are factual and well documented. Benefits include easier start, lean-burn, faster more complete combustion, reducing idle speed and less pollution of all kinds.

Pure H₂ can be carried on-board a vehicle using high-pressure bottles, cryogenic liquid, metal hydrides and using various chemical techniques http://en.wikipedia.org/wiki/Hydrogen_storage. Pure H₂ can also be 'created' on-board by various 'fuel reforming' technologies, separating H₂ from fuel or alcohol or using sacrificial metals http://en.wikipedia.org/wiki/Fossil_fuel_reforming.

BUT almost all of the pure H₂ addition-supplementation that has been researched is **NOT BG**. **BG is NOT pure H₂**.

BG is unique gas, *a combination of constituents*, created from water using electricity through an electrolyzer that is **specifically** designed to NOT separate the gas constituents (more below).

[Brown's Gas is also known under many trade names](#) including but not limited to: Rhode's Gas, Hydroxyl, Spirig Gas, Hydroxy, Green Gas, BG, Klein Gas, Aquygen, HHO, HRG, SG Gas, Ohmasa Gas, 'Higher Energy Water' and (misnamed by Wikipedia) OxyHydrogen.

Unfortunately most BG advocates *quote non-applicable studies* when trying to provide credible proof that BG supplementation actually works.

They want their audience to 'infer' and assume that since one of the main components of BG is H₂, *that the H₂ studies have some validity*. Unfortunately **this assumption doesn't work because 1. BG isn't just H₂ and 2.** It doesn't address the **main reason** 'experts', critics and skeptics are 'certain' that on-board BG technology is a fraud.

The 'experts', critics and skeptics 'KNOW' it takes more energy to create the BG than you can possibly get from it during 're-combustion'.

Their reasoning has validity (explained below) and would be true *if BG were burned as the ONLY fuel*; but also shows ignorance of important combustion characteristics (explained below that) when small volumes of BG are used to supplement regular fuel.

Validity of Efficiency Argument:

Since BG is created using electricity, and the electricity comes from the alternator, and the alternator is driven by the engine, and the engine runs on fuel; then ***the electricity needed to make BG comes from the fuel normally used by the engine.***

Any competent mechanic knows, *because of the inefficiencies involved in each of the steps above*, it takes about 11 watts of fuel (actually consumed by the engine) to make 1 watt of electricity from the alternator.

Here's the math: For every watt of fuel the engine burns, the system inefficiencies take away the energy as follows: the gasoline engine is about 25% efficient; the belt drive about 75% efficient; the alternator about 50% efficient; resulting in a watt of fuel needed to produce 0.094 watt of electricity (this can be considered to be a median, as above efficiencies vary widely).

Also consider the **efficiency of the electrolyzer** that uses the electricity to make the BG. Traditionally designed BG electrolyzers use up to 7 watt-hours to make one STP Liter of BG (28% efficient). **So you'd then need to burn 38 watts of fuel to make 1 watt of BG.** We use modern BG electrolyzers that use less than 2 watt-hours to make a STP Liter of BG (100% efficient); so, in this document, **we consider the ratio of fuel watts to BG produced to be 11:1.**

What this argument-explanation actually means is that in order *to achieve ANY gain, the BG catalytic effect must be able to release 11 times MORE energy* (from increased combustion efficiency) than the energy (in fuel) the engine consumed to produce the BG.

What it **ALSO** means is that once you've generated the optimal volume of BG (for the catalytic effect) any *additional* BG produced **LOSES your gains at a ratio of 11:1**. *The optimal BG volume varies in every application*; so being able to *efficiently* vary BG production is also vital.

'Experts', Critics and Skeptics Ignorance:

Unfortunately, most 'experts' are unaware of one of the most important benefits of BG supplementation, which is **its function as a combustion catalyst**. Ordinary H₂ has a relatively small combustion enhancement effect and 'experts' assume that BG is the same as H₂. Nothing could be farther from reality.

BG is a mixture of at least 6 constituents, H, O, H₂, O₂, H₂O (as water vapor) and ***Electrically Expanded Water (EEW)***. *This mixture doesn't just enhance combustion like H₂*. **Because of the EEW**, BG acts as an actual ***combustion catalyst***.

EEW is a hitherto unknown form of water. I discovered and named EEW in 1996, Yull Brown previously called it 'fluid crystal' and Ruggero Santini subsequently calls it 'Magnacules'. [Proof of existence and characteristics of EEW are not covered in this document](#). The important point here is to **prove its effect** as a ***combustion catalyst***.

EEW is the reason WHY BG works

The BG catalytic effect works at the molecular level, helping the fuel's atomic bonds to break with less energy input. It's called ***'lowering the combustion self-propagating endothermic energy requirement'***.

In the chemical process of combustion, the fuel molecules *must actually break apart*, ideally allowing all the individual atoms to become free. The energy *normally* required to break the fuel apart, *to break the atomic bonds*, **is well known** (I detail those calculations in other documents) and is called endothermic energy (the energy that's put INTO the process).

Once the atoms are free, they can (usually do) recombine to form the 'exhaust' molecules of water (H₂O) and carbon dioxide (CO₂). The energy to 're-form' into exhaust constituents is much less than the energy it took to initially break apart the fuel molecules, so some energy is 'left over' and manifests itself as 'heat' (aka exothermic energy). This normal 'oxidation' of fuel provides the excess heat that powers your engine.

To continue combustion (called self-propagation) the chemical process 'takes' some of the exothermic heat to use as the input energy to break apart more fuel molecules. Thus ALL the endothermic heat (GROSS endothermic), which was inherently available in the fuel, does not

show up as excess heat (NET exothermic) because the *traditional* combustion process ‘took’ some of it back.

As a catalyst, BG lowers the amount of heat energy the chemical reaction needs to break apart the fuel molecules and thus more of the, **already inherent**, energy shows up as excess heat. **The ‘extra’ heat did not come from ‘nothing’, it was always there**, just ordinarily absorbed by the combustion process.

Internal combustion engines are *heat engines*. With BG you can use less fuel to get the same heat as before AND since the combustion happens faster, smoother and *during the optimum time* (combustion timing is **very** important for reciprocating IC engines). Correct timing allows the ‘extra’ heat energy to be efficiently converted to mechanical energy (an additional bonus).

It is **VITAL to understand that EFFICIENCY is the KEY** to achieving optimal results with BG supplementation. The less parasitic fuel (used by the engine) to create the BG, the greater the beneficial effects of the BG... Because MORE heat will be available for the engine (at the right time) to convert into mechanical energy. Techniques and options to increase engine, alternator and electrolyzer efficiency are discussed in my [HyZor Technology](#) book.

The quantity of exothermic (net additional) heat energy released is far greater than the energy used to make the Brown's Gas. *It's not magic, it's simple chemistry.*

Catalytic reactions are well known in chemistry and used everywhere. The ‘experts’, critics and skeptics don’t understand that, *in this application*, BG is a **CATALYST not a FUEL!**

Efficiency is the key to optimizing on-board electrolyzer gains.

You do not want to **lose** all your ‘additional’ heat energy with inefficiency.

1. You need to produce (generate) your electricity as efficiently as possible (HyZor Technology options can help you get the parasitic ratio down from 11:1).

2. Then you need to produce (generate) the BG as efficiently as possible.

Traditional electrolyzers produced gas with efficiencies in the range of 7 watt-hours per liter of [STP gas](#). *You shouldn't consider any on-board electrolyzer technology with an efficiency that requires more than 2 watt-hours to make a STP liter of BG.*

Eagle-Research HyZor Technology is based on BG electrolyzers that have been **independently, scientifically proven** to produce BG with less than 2 watt-hours/liter of STP gas.

Here are FAQ discussing why you may or may NOT want to use our HyZor Technology: <http://www.eagle-research.com/cms/faq/fuel-savers-general/er-hy-zor-general>

3. Finally, you must use appropriate **Combustion Enhancement Interface Technology (CEIT)**. Your vehicle's fuel system was designed to operate using *inefficient* combustion technology (not changed since the 1800's). When you make the combustion more efficient, *the modern fuel computer usually reacts by adding more fuel to 'compensate' and bring the 'efficiency' back down to where it 'thinks' it should be.* Appropriate CEIT allows you to smoothly merge your combustion enhancement technology with your existing fuel system, so you can optimize your efficiency (and thus savings). *CEIT options are discussed in other documents,* (like the [Carburetor Enhancer Manual](#) and [EFIE Manual](#)); also appropriate MAP/MAF Enhancers...

We use Brown's Gas to increase the efficiency of internal combustion and then (for optimum results) **add water** to compensate for the fuel mass that we have reduced (*water replaces the volume of fuel normally used as the combustion 'cooling' fluid to keep the NOx low*). We describe appropriate technology in our '[Brown's Gas](#)', '[HyZor Technology](#)', '[Water Injection](#)' and '[Super Gas Saver Secrets](#)' books and Resources.

The ratios below are based on our own internal combustion research and on data acquired from various other sources that add BG to assist carbon-fuel combustion.

Our research so far indicates that the BG catalytic effect is much more effective on long chain hydrocarbons. So Methane (and Compressed Natural Gas) has the least gain (5%), Gasoline (Petrol) has a greater gain (around 25%), Diesel has a very good gain (around 50%) and heavy oils (like the crude used to fuel ocean going ships) get the greatest gain ([can replace up to 90% of fuel with water](#)). Coal is better yet. All this assumes, of course, proper implementation of the technology and at least some water injection.

Our research shows that ratios as high as 50,000:1 air:BG can have a positive effect. It is true that more BG may (often does) result in higher fuel savings, but there is an *optimum ratio* for any given application (we are researching to find that ratio). ***After the volume of BG required for the catalytic effect is achieved, any additional BG produced results in mileage lost.***

It is vital to realize that the QUALITY of the BG is more important than the QUANTITY of gas. *It is the EEW portion of the BG that is the catalyst and is giving you your gains.* So what would be more effective... 10 liters of BG that contains 10% EEW or 2 liters of BG that contains 50% EEW? Answer, they both contain 1 liter of EEW and would have *exactly the same effect.* BUT the 10 liter sample likely took more amperage to make (thus had more parasitic fuel consumption) and therefor wouldn't show as great a gain (maybe even a loss).

The ideal is to develop an on-board electrolyzer that maximizes EEW production *while using the least amount of amperage* (to minimize parasitic fuel consumption). That is what we do with the [HyZor Technology](#). So far, we have demonstrated that 2 amps of current through our HyZor can achieve the same gains others are getting using 20 amps.

Further, one must always consider the amperage capacity of the vehicle's alternator. Most light vehicles have around a 35 amp alternator; which needs to provide electricity to the headlights (14 amps), park lights (8 amps), ignition system (2 amps), Heater/air conditioning fan (6 amps) and a host of other items like the computer, radio, iPod charging, etc. *Using too much amperage will drain the charge from your battery and/or burn out your alternator.*

Applicable Credible Proof Documents

Because there is such a prevailing miss-understanding among 'experts', *that on-board electrolysis will not provide any measurable benefit*, there are currently few **applicable** scientifically credible studies for BG proponents to quote, *because 'experts' obviously wouldn't waste their time on something they 'know' won't work.*

Fortunately there ARE a few...

and I suspect that there will soon be many more, because of the massive ground swell of people that are applying the technology to their vehicles in spite of the 'experts', critics and skeptics pontifications (*People believe their friends and bypass the ignorant talking heads*). Experts will eventually have to 'prove' WHY the technique works, because the technology has already been accepted by the 'ignorant' (but **practical thinking**) public **BECAUSE it WORKS!**

As I stated before, you'll find most people *who promote on-board electrolyzers (aka generators)* using the same 'proofs' because there are so few and they are hard to find. Also most of the 'proofs' they do use are 'invalid' because they are the WRONG technology (pure H2 supplementation). **NOW, everyone will finally have credible, applicable proof!**

I've worked hard to find a reasonable quantity of unique, applicable, credible, scientific documents that prove, *beyond the shadow of doubt*, that when generated from an on-board electrolyzer, BG **can** improve the combustion of carbon-fuels to achieve lower fuel consumption and pollution while maintaining full power and performance. (*I'm not saying WILL improve, because there are too many variables, I'm saying CAN improve; and should if everything is done correctly.*)

Skeptics state that there **CAN'T BE** any proof *so there IS NO such proof*. It should only take ONE *credible document* to use as proof... if the 'experts, critics and skeptics are honest.

Here's the smoking gun...

(<http://tinyurl.com/yhlcmaq2>)

GUIDELINES FOR USE OF HYDROGEN FUEL IN COMMERCIAL VEHICLES

~ Final Report November 2007

<http://www.fmcsa.dot.gov/facts-research/research-technology/report/Guidelines-H2-Fuel-in-CMV's-Nov2007.pdf>

This document specifically mentions on-board electrolysis in Sections 1.2.3, 1.5 and 3.5.

They claim tests on an old diesel got gains of 4% in economy and 7% less particulates.

This is an incredibly low gain for this technology (see below). **However, it IS a GAIN AND is included in a Government certified document** (*proof that the Government KNOWS that this technology is valid!*).

This is an **OFFICIAL USA Government GUIDELINES!**

This ONE document should be enough to convince 'experts' critics and skeptics that BG supplementation is *at least* worth a **REAL LOOK**.

It would be interesting to see the actual electrolyzer used and the way it was applied to the engine, to see if the net gains could have been improved (most of these early tests were done with very inefficient electrolyzers).

This document also states (Section 1.2.2) that air:hydrogen fuel mixtures as low as **86:1** are possible (on a Ford V10) but “hydrogen engines can run on A/F ratios of anywhere from 34:1 (stoichiometric) to 180:1” according to ‘Hydrogen Use in Internal Combustion Engines’ http://www1.eere.energy.gov/hydrogenandfuelcells/tech_validation/pdfs/fcm03r0.pdf.

The fact is that internal combustion is ENTIRELY different than open air combustion.

Compression of any fuel mixture allows MUCH leaner mixtures to be efficiently burned (compared to open air combustion). This is an example of vital information that is NOT taught to mechanics and is one of the points I make in my book ‘Extreme Mileage, 101’.

I’m thinking that most ‘experts’, critics and skeptics would accept documents, that are peer approved for **Society Of Automotive Engineers (SAE)** and **International Journal of Hydrogen Energy**, as scientifically credible independent verification... Most of these papers are copyrighted and need to be purchased.

<http://papers.sae.org/971703>

Combustion Characteristics of Electrolytically Produced Hydrogen-Oxygen Mixtures

“The paper reports and evaluates the combustion pressures of electrolytically produced stoichiometric hydrogen-oxygen mixtures...”

<http://papers.sae.org/2003-32-0011>

Investigating Combustion Enhancement and Emissions Reduction with the Addition of 2H₂ + O₂ to a SI Engine

I included this document as further proof that **BG is NOT the same as H₂ and O₂**, **no catalytic action when using pure H₂ & O₂** (which is why Wikipedia is wrong)

“...The hydrogen and oxygen were added in a ratio of 2:1, **mimicking** the addition of water electrolysis products... Under the conditions tested, the power necessary to generate the hydrogen on board through electrolysis was greater than what was gained from the engine.”

<http://papers.sae.org/2006-01-3431>

Effects of Gasoline-Air Enrichment with HRG Gas on Efficiency and Emissions of a SI Engine

“The present contribution describes the results of an experimental research where gasoline-air mixture was enriched with a Hydrogen Rich Gas (HRG) produced by the electrical dissociation of water. The HRG analysis shows the presence of hydrogen and oxygen together with some additional species... The possibilities of improving engine performance and emissions in correlation with the amount of HRG, the equivalence ratio and the engine operating condition are thus outlined.”

<http://papers.sae.org/2010-01-2190>

Hydrogen Enriched Diesel Combustion

“...using conventional diesel fuel with mixtures of hydrogen and oxygen generated from water at the point of use...the experiments and the systematic approach followed to reduce the fuel consumption and CO₂ are presented in this paper.”

International Journal of Hydrogen Energy

Volume 16, Issue 10, 1991, Pages 695-702 (<http://tinyurl.com/5w4e9ny>)

Driving cycle simulation of a vehicle motored by a SI engine fueled with H₂-enriched gasoline

“...(theoretical) significant reduction in the total fuel consumption in the order of 15 to 20% and an associated reduction in HC, CO and NO_x emission levels, is achieved...”

International Journal of Hydrogen Energy

Volume 25, Issue 9, 1 September 2000, Pages 895-897 (<http://tinyurl.com/4z7yrg5>)

Fuel economy improvement by on board electrolytic hydrogen production

“...(actually) tested on four cars... without altering any performance criteria, the system yields 35±40% fuel savings and reduces exhaust emissions.”

International Journal of Hydrogen Energy

Volume 24, Issue 6, 1 June 1999, Pages 577-586 (<http://tinyurl.com/4puzjny>)

Hydrogen as an additive to methane for spark ignition engine applications

(Theoretical) “range of viable operation of such an engine is very narrow”

International Journal of Hydrogen Energy

Volume 35, Issue 20, October 2010, Pages 11366-11372 (<http://tinyurl.com/4eIndxd>)

Hyceltec 2009 Conference

Effect of hydroxy (HHO) gas addition on performance and exhaust emissions in compression ignition engines

(Actual) “...HHO system addition to the engine without any modification resulted in increasing engine torque output by an average of 19.1%, reducing CO emissions by an average of 13.5%, HC emissions by an average of 5% and SFC by an average of 14%.”

International Journal of Hydrogen Energy

Volume 35, Issue 23, December 2010, Pages 12930-12935 (<http://tinyurl.com/4qlyrrq>)

Asian Hydrogen Energy Conference 2009

Reduction of fuel consumption in gasoline engines by introducing HHO gas into intake manifold

(Actual) “Test experiments were conducted on a 197cc (Honda G 200) single-cylinder engine... goals of the integration are: a 20–30% reduction in fuel consumption, lower exhaust temperature, and consequently a reduction in pollution”

Fuel

Volume 89, Issue 2, February 2010, Pages 378-383 (<http://tinyurl.com/4s9xswj>)

Effect of H₂/O₂ addition in increasing the thermal efficiency of a diesel engine

(Actual) “...resulted in 15.07%, 15.16% and 14.96% fuel savings. The emissions of HC, CO₂ and CO decreased, whereas the NO_x emission increased.” *I note they didn't add water injection.*

Here are some additional documents (*that don't qualify as 'scientific' proof*) to give you a further 'feel' for the potential of on-board electrolyzers.

This is the 'primary' document used as 'proof' in the past. It's past time to be updated.
[http://www.eagle-research.com/erpdf/fs/HyZor/HyZorProofs/HGS Hydrogen proofs.pdf](http://www.eagle-research.com/erpdf/fs/HyZor/HyZorProofs/HGS%20Hydrogen%20proofs.pdf)

Here is a test that was done using Darol Mason's variation of the HyZor Technology.
<http://www.eagle-research.com/erpdf/fs/HyZor/HyZorProofs/MightyMite.pdf>

This is an incomplete 'Whitepaper' (missing the patent application and its references) that was given to me by a friend (*I'd like to have the complete document, if anyone has a copy*).
<http://www.eagle-research.com/erpdf/fs/HyZor/HyZorProofs/HigherFormOfWater.pdf>

This is a study done by the University of Idaho comparing on-board electrolyzer 'theoretical' papers with 'actual' experiments.
[http://www.eagle-research.com/erpdf/fs/HyZor/HyZorProofs/Hydrogen Enriched Hydrocarbon Combustion.pdf](http://www.eagle-research.com/erpdf/fs/HyZor/HyZorProofs/Hydrogen%20Enriched%20Hydrocarbon%20Combustion.pdf)

Testimonials

Testimonials are a real grey area. They definitely don't qualify as scientifically credible documents; but they do add to the **body of evidence**. The 'rules' of using testimonials as sales aids are fairly strict. You should have written permission from the author to publish the testimonial, you need to make it clear that it is a testimonial and **you can NOT make 'claims' based on the wording of testimonials**. So, at most, testimonials give an indication of customer satisfaction. **BEWARE** that there are a lot of promoters who use only the BEST testimonials.

I make NO judgment on the testimonial links below, which are a sampling of what's out there and provided as examples. ***Inclusion or exclusion from this list does NOT indicate my opinion on the technologies used... they were just the first I found as I did a quick online search.*** Anybody selling BG on-board electrolyzers will have some testimonials.
(when looking for more testimonials, remember to search using other BG trade names too).

<http://www.gothhocolorado.com/testimonials.php>

<http://fftfuelsaver.com/testimonials/>

<http://a quygen.blogspot.com/2008/08/water4gas-testimonial.html>

<http://www.hhoboostnow.com/testimonials>

<http://www.hydrogen-fuel.ca/testimonials.php>

<http://hhofuelllc.com/testimonials.html>

Videos ‘indicating’ BG supplementation works

There are many others; if you know of one you’d like to see here, send me the link.

<http://www.youtube.com/watch?v=1sVJQfuZnml>

“...mileage tests on my Ram 1500... Stock: 16.4 mpg... O2's + HHO: 23.6 mpg”

http://www.youtube.com/watch?v=Dp8p0_1zBZU

Here’s our HyZor “...25% improvement” Later, on long trip, improved over 50%

<http://www.youtube.com/watch?v=MzK84JUDnho>

“...1986 diesel 4x4 monster van (international 6.9 liter non turbo diesel)... goes from 12-16 mpg to 23-25 mpg in town!...”

<http://www.wyff4.com/video/16914710/detail.html>

Local Police using water4gas electrolyzers

<http://www.youtube.com/watch?v=7ireXIV7m-k&feature=related>

“...Jeep... from at best 15 MPG to 36.82 Miles Per Gallon”

<http://www.youtube.com/watch?v=oBBTpRQnWoA>

Lots of different testimonials

<http://www.youtube.com/watch?v=EDau1G9ul1I>

61% improvement in mileage on dynamometer

<http://www.youtube.com/profile?user=ZeroFossilFuel#p/c/0/8LKq7wHzxgzg>

Increasing run time of a gasoline generator

http://www.youtube.com/watch?v=_6jNjPJoS1M

Skeptic rebuttal comments on Water as Fuel test procedure. (warning, coarse language)

<http://www.youtube.com/watch?v=fGLJ5J5i0Yk&feature=related>

High School student experimentation

<http://www.youtube.com/watch?v=Y9y9pC9C2ro>

Vancouver Gadgeteers ~ BG-assist scooter (have dynamometer test data)

<http://revver.com/video/839092/water4gas-testimonialsit-works-4-bette-mpg-cleaner-fuel/>

Lots of videos attached to this profile.

News Articles that ‘indicate’ (not prove) BG addition works

<http://www.wired.com/cars/energy/news/2005/11/69529>

<http://www.greencarcongress.com/2005/11/hydrogenenhance.html#comment-11093310>

On-Board Electrolyzer Patents

Unfortunately, the Patent Office does not usually require a working device or any kind of proof of viability as a prerequisite for obtaining a patent... **so patents do not constitute credible proof.**

*However, patents do contribute to the **BODY of EVIDENCE** that indicates proper scientific research **should be done.***

Also remember that every patent is supposed to be unique; there are only just so many ways to do something (though people are always thinking up more, which is WHY there is more than ONE patent). So a 'few' patents can be replicated by millions of users. **ONE idea (patented or not) can revolutionize our entire way of life!**

Every person that has actually acquired a fuel-saving patent went through a process that I can only describe as expensive, time consuming, aggravating, suppressive and usually futile. That they completed the patent process is a good indication THEY believed their apparatus worked.

Patents have an important feature for this PROOF document. They have a list of references, which will lead you to MORE. The patent list shown here are only a few of the hundreds that can be found. Search <http://www.freepatentsonline.com/> or <http://www.google.com/patents>. I've occasionally provided links to more details about the inventors and/or their innovations.

US1262034 April 9, 1918 Charles H. Frazer
<http://waterpoweredcar.com/frazer.html>

US1490975 April 15, 1924 William Howard

US1876879 Sept. 13, 1932 Walter Drabold

US2006676 July 2, 1935 Charles H. Garrett
<http://keelynet.com/energy/garrett.htm>

US2509498 May 30, 1950 George Heyl

US3311097 March 28, 1967 Georg Mittelstaedt

US3980053 Sept. 14, 1976 Stephen Horvath
<http://www.couriermail.com.au/news/features/horvaths-hydrogen-fairlane/story-e6freoro-1111119160884>

US4023545 May 17, 1977 Edward G. Mosher

US4124463 Nov. 7, 1978 Archie H. Blue
<http://waterpoweredcar.com/archieblue.html>
<http://tsikot.yehey.com/forums/showthread.php?t=18617>

US4368696 Jan. 18, 1983 Weldon E. Reinhardt

US4394230 July 19, 1983 Henry K. Puharich
http://en.wikipedia.org/wiki/Andrija_Puharich
<http://www.rexresearch.com/puharich/1puhar.htm>
<http://www.disclose.tv/forum/water-as-fuel-andrija-puharich-suppression-by-rockefeller-t20291.html>

US4936961 June 26, 1990 Stanley A. Meyer
<http://waterpoweredcar.com/stanmeyer.html>

US5394852 March 7, 1995 Roy E. McAlister
<http://www.apfn.net/dcia/mcalister.html>

US5399251 March 21, 1995 Yoshiro Nakamats
http://en.wikipedia.org/wiki/Yoshiro_Nakamatsu
<http://www.rexresearch.com/nakamats/nakamats.htm>

US5852993 Dec. 29, 1998 Herman P. Anderson
<http://www.waterpoweredcar.com/herman.html>

US6126794 Oct. 3, 2000 Stephen Barrie Chambers
<http://www.highbeam.com/doc/1P3-2198970631.html>
<http://thewaterfuelreview.com/blog/tech/water-fuel-cell-by-xogen/>

US6314918 Nov. 13, 2001 Steve McFarland

US6209493 April 3, 2001 Bill Ross

US6659049 Dec. 9, 2003 John Zagaja

US6981367 Jan. 3 2006 John Childs (assigned to General Motors)

US7143722 Dec. 5, 2006 Bill Ross

US7475656 Jan. 13, 2009 Yurly Yatsenko

US7753010 July 13, 2010 Keith Rutledge

US7793621 Sept. 14, 2010 William Stehl

Here are a couple of charts from Dr. Scott H. Cramton's research (he has MUCH more)...
The CIA has already 'visited' him even though he isn't American and doesn't live in the USA.
<http://www.eagle-research.com/erpdf/fs/HyZor/HyZorProofs/DieselTest.pdf>
http://www.eagle-research.com/erpdf/fs/HyZor/HyZorProofs/HHO_40Kw.pdf

'Experts' Critics and Skeptics

It wouldn't be fair to present PROOFs without reviewing the opposite opinions as well. *I value the opinions of 'experts' critics and skeptics*, because they (from an outside perspective) [point out the issues that they think need to be addressed](#) to PROVE the innovation works as described. *This allows me, as the innovator, to put together a much better presentation than I'd likely do by myself*; because I get to see what miss-understandings and ignorance I need to address (overcome) to educate reasonably open-minded people.

From decades of experience as an inventor I've found that 'experts', critics and skeptics are **usually unaware** how Vested Interest uses them to help suppress energy saving technologies. People believe what 'experts' say because 'experts' have an 'education'. Unfortunately, most 'experts' do not ever learn that they have a '**Vested Interest education**'. I do value an education (*I learn more everyday*), but *I place little relevance on the opinion of people who use their assumptions (regardless of academic achievements), instead of the facts, to evaluate a technology.*

Any honest person MUST realize that NEW technology and information may not fit into the 'established theories' (assumptions) they were taught. After all, it was once KNOWN (as in common knowledge) that *the Earth was flat and that it was the center of the universe.* Technology is advancing at an increasing rate *and thus disposal of old assumptions.* Whatever one learns in 'school' is increasingly out of date the day after graduation.

In my research and experimentation (since 1974) I have gone 'beyond' the education that was impressed upon me (I'm competent in several trades). I've learned **facts** that are **NOT taught** and much about the 'miss-direction' and deception that IS taught. *For example: since the 1950's there are NO technical reason why ordinary passenger vehicles do not exceed 200 MPG (see my book 'Extreme Mileage, 101'). [Here's a partial list of suppression cases.](#)*

I can't present ALL of the 'experts', critics and skeptics because Vested Interest suppression makes almost every 'educated' person fall into that category. So here are a couple that specifically put their reputation on the line addressing Brown's Gas:

[Don Lancaster](#)

I respect Don's expertise.

I have now met all his requirements for proof; as listed in his documents.

<http://www.tinaja.com/glib/trashelc.pdf>

<http://www.tinaja.com/glib/muse153.pdf>

<http://www.tinaja.com/glib/resbn88.pdf>

[Eric Krieg](#)

Eric has always impressed me as an honest skeptic, again here's the proof he asked for.

http://peswiki.com/index.php/Congress:Member:Eric_Krieg

http://peswiki.com/index.php/Directory:Suppression:Skeptical:Eric_Kreig

<http://discoverhydrogen.com/blog/2009/10/proof-that-hho-really-works-skeptic.html>

Ignorance is easily cured. Stupidity... that's a lot harder. ~ Geneva Wiseman
Common sense isn't so common. ~ Geneva Wiseman

None are so blind as those who will not see ~ Jonathan Swift

All truth passes through three stages: First, it is ridiculed; Second, it is violently opposed; Third, it is accepted as self-evident. ~ Arthur Schopenhauer (1788-1860)

The Stone Age did not end because the cavemen ran out of stones. ~ Sheikh Yamani

Examples of skepticism in the news and on the NET

WYFF News 4's Tim Waller (Reporter)

<http://www.wyff4.com/news/17036761/detail.html>

"...1990 Buick Century... lost 2 mpg"

<http://www.wyff4.com/video/16847646/detail.html>

<http://www.wyff4.com/video/17042743/detail.html>

GW Comments: First, they used a 'jar type' system, one of the **least efficient** on-board electrolyzers; *I'm glad water4gas has since evolved.* Second, they did not use any CEIT at all, so how could they possibly synchronize the electrolyzer to the fuel system and optimize the gain from the enhancements? *The "richer mixture" mentioned was a result of the combustion enhancement and needed to be compensated for.* Not using CEIT is like installing a radio and then **not** tuning it to a station.

The mechanics also showed a typical miss-understanding of the laws involved regarding aftermarket modifications; there are NO illegal changes to the emissions system (all emission components are untouched) and the pollution is always dramatically reduced.

<http://www.consumeraffairs.com/news04/2008/07/water4gas.html>

GW Comments: again, a few '**experts**', who have **no knowledge** of the actual operating principles of on-board electrolysis, are quoted voicing their opinions. Unfortunately, even though the opinions are incorrect, **this is the sort of PROOF that the Vested Interest uses to suppress the technologies that threaten their income (trillions of dollars per year).**

Found this link on wikipedia.org (Wikipedia has a long history of suppressing BG, which they mistakenly call OxyHydrogen; they do not, yet, accept that BG is made of unique constituents).

<http://green.autoblog.com/2008/08/04/why-on-board-hydrogen-generators-wont-boost-your-mileage/>

<http://green.autoblog.com/2006/11/27/on-board-electrolysis-unit-to-generate-hydrogen-for-injection-to/>

GW Comments: Here are typical bloggers, who write based on '**expert**' (but ignorant) **opinion, not facts.** The blog's comments profile a lot of people who are even more ignorant than the 'experts' (I could write a book on the miss-understandings). *The most interesting thing about these blogs is the comments from people who are **ACTUALLY USING** the technology!* They **KNOW it works** and that the '**experts**' are **WRONG!**

Further Vested Interest Suppression (in my opinion)

Sometimes, when the 'educated' skeptics aren't handling the public perception well enough, Vested Interest steps up with a 'public myth-information' campaign. **They do this by using their Media Resources to 'protect the consumer'**. The examples below are typical from my files. I do not know if Mike Allen or Myth Busters are willing and/or knowing accomplices to this suppression... or if they are ignorant patsies. Either way, the public *gets the message* that fuel saving technology in general and specifically on-board electrolyzers *don't work*.

Mike Allen (Popular Mechanics Magazine)

<http://www.popularmechanics.com/cars/alternative-fuel/gas-mileage/4276846>

Mike stated, "*My fuel economy is exactly the same, whether the HHO... is turned on or not*". If the skeptic's theory is correct, *that it takes more energy to make the BG than you can get back from burning it...* then **fuel economy should have DROPPED!** His statement **proves that the BG was doing SOMETHING!** There had to be an 11 time GAIN just to bring it even!

Sorry Mike, your test is invalid for the same reasons you would use if anyone tried to put such a test past YOU! It wasn't a scientifically credible test because it can't be PROVEN to be.

1. You didn't provide the information to support your tests, no testing protocol, not enough information on your testing apparatus, not double-blind and no public access to the raw data.
2. You didn't have an expert pro-BG installer to observe and verify your tests.
3. You *used no CEIT*, and (in my opinion) used the usual mechanics interpretation of the laws involving vehicle anti-pollution equipment.

The FACT is, properly applied, CEIT does not remove, modify or deactivate existing anti-pollution equipment AND the pollution usually drops significantly when appropriate combustion enhancement technology is applied; *so the 'anti-tamper laws' mechanics refer to aren't applicable*. Further, the Magnusson-Moss Consumer Product Warranty Act of 1992 allows people to **add any equipment they desire without voiding a vehicle's warranty**.

4. You used an inefficient electrolyzer and you didn't provide any efficiency data for it either. You should use an electrolyzer that gets **at least 2 Wh/L or 8 MMW of efficiency**.

When I tried to help Mike with suggestions to make the test credible (thinking that he was simply ignorant)... the PM website refused to allow my posts (**obviously I'm on the NOT approved list**). He does get lots of posts from people who **KNOW his opinion is incorrect!**

Then the next phase of the story...

<http://www.popularmechanics.com/cars/alternative-fuel/gas-mileage/4310717>

Mike Allen then teamed up with Dateline NBC and an EPA-certified emissions lab to ambush Dennis Lee by creating (in my opinion) another bogus test. It looks very good in the video but there is no way (in my opinion) that it is correct; it's like someone sabotaged it. *Again, there was NO expert pro-BG representative to observe and verify the tests.*

I met [Dennis Lee](#) personally when he got out of jail. **He and I do not agree on proper business ethics or etiquette**; but he is a world-class promoter. **I'm not his friend** yet have to say, this time he's in the right; THIS technology (on-board electrolyzers) actually works.

The report was then used by the Government as an excuse to issue a FTC lawsuit... Dennis Lee was able **to prove the technology was valid** (*or at least that the prosecution's case was a farce*) but the freezing of his assets and the negative publicity shut down his business anyway; *which was the purpose of the suppression*. **Exactly as they did with Tucker years ago.**

Myth Busters

I love the show, it's entertaining and I thought it was a great concept (I liked MacGyver too). Unfortunately as an inventor who has experimented with some of the technologies they 'bust' I'm really disappointed that they seem to take pains to *build their 'tests' with the least possible efficiency* (you almost have to have some idea of the truth to do it so badly).

Further, their experts, (while undoubtedly educated), really don't show that they understand how the technologies **actually** work. *Like having a Math teacher fix a car in shop class.*

I'm speaking specifically about the [Minto Wheel replication](#) (the tanks were mounted 90° wrong with no heat exchangers) and the [on-board electrolyzer \(HHO\) test](#) (trying to run a car on a BG electrolyzer without any gasoline and with one of the least efficient electrolyzers).

Since they messed up both of these tests, I give the show about as much credibility as a politician's promise. I now think the show is sponsored by the Vested Interest (who own most of the Media) and is specifically intended to entertainingly miss-inform the public (which they do very well).

If you want to know how to do a Minto Wheel properly, sign up to the Yahoo eGroups <http://groups.yahoo.com/search?query=minto+wheel>

There are a lot of resources you can download to build a proper wheel. And there are a lot of guys there that can set you on the right track. No, I don't think it's the answer to our shortage of clean energy but I do think it can help some people and it is NOT as inefficient as Myth Busters made it out to be. It does have possibilities as a simple, no moving parts, prime mover that uses NO fuel and produces useful work. No one is building them and it would take a pretty resourceful person to build it for them self. Its cost can be reasonable if you know what you are doing.

As for the on-board electrolyzer (HHO) test... They needed to understand that they were testing a catalyst, not a fuel; and trying to run the vehicle on the catalyst (instead of fuel) was an exercise in futility (which they entertainingly demonstrated). **They (deliberately?) confused using BG as a catalyst with using BG as a fuel.**

There have been quite a few Water as Fuel technologies invented and **the Vested Interest has (so far) been very successful at suppressing them.**

A recent example (2007) was **Paul Ziguoras**; he had a system that would split 5 gallons of water per minute using 160 amps at 13.6 VDC. It would produce 150 hp at 4100 RPM on an engine they dynoed. *He was told that it was against the law (in the USA) to mass produce any technology that could crash the economy* and was paid \$6,000,000 to stop selling his prototypes on eBay. The USA Government then tracked down every unit that he'd sold and acquired them too. *He then clammed up so tight you'd think his life depended on it.*

Quite a few people are using the clues the pioneers have left behind to try to duplicate the technologies. *To duplicate a technology you first have to assume it worked.* **Mike Allen** and **Myth Busters** have reinforced the perception that on-board electrolyzers don't work.

Conclusion:

You now have documentation that **PROVES on-board electrolyzers CAN work** and a *working theory WHY*. Of course, this PROOF also **raises more questions** like:

1. How can we stop Vested Interest from suppressing Free Energy?
2. What are BG and EEW?
3. What is the optimal volume of BG to fuel ratio?
4. Which on-board electrolyzer do you choose for your vehicle?
5. Can vehicles really run on WATER as the ONLY fuel?
6. Do we have PROOF for all the OTHER uses of BG too?

For your interest, here are some non-applicable videos of Water as Fuel *self-running* internal combustion engines

These videos DO show water being used as a **FUEL** instead of a **catalyst**. I cannot currently verify if these videos are showing real technology or elaborate fakes. I'll be following these up in my Water as Fuel Resources.

http://www.youtube.com/watch?v=cMlciNOyo_U

Anton electrolyzer (self-running)

http://peswiki.com/index.php/Directory:_Hydrogen_Hog_by_Future_Energy_Concepts,_Inc.

Seems like a successful replication of Stan Meyer's technology.

<http://www.youtube.com/watch?v=XWhHCGlv9r8&feature=related>

Japanese Water Powered car

<http://www.youtube.com/watch?v=UcejWoe8cMQ&feature=related>

News Article on Stan Meyer's dune buggy

<http://www.youtube.com/watch?v=A-q6HGmN07o&feature=related>

Joe Cell demonstration

<http://www.youtube.com/watch?v=UVhXrvCCILw>

Daniel Dingle demonstration

<http://www.youtube.com/watch?v=KyNNIDAp5dM>

Steve Ryan ~ Australian Water Powered Motorbike

I do NOT, yet, know how to run an engine on pure water but

I FIRMLY believe it is possible, here's why:

<http://www.eagle-research.com/cms/eagle-research-enotices/6-water-fuel-update>

Some Water As Fuel websites

<http://waterfuel.t35.com/>

<http://knol.google.com/k/water-fueled-car#>

<http://www.panacea-bocaf.org/paulzigouras.htm>

<http://waterpoweredcar.com/>

Who is George Wiseman?

George Wiseman is a world-renowned inventor, writer and [consultant](#). He is a *certified automotive technician*. He has been researching alternative, sustainable energy technologies and high mileage techniques since 1974 and on-board electrolysis since the late 1980's. Most of the current Water as Fuel grassroots movement can be traced back to his groundbreaking research and books.



He develops the technologies for his own use and then, **instead of patenting, writes up complete instructions** to help anyone apply the innovations in their own life. He's been doing this successfully since 1984 when he started Eagle-Research.

Quite a few people have made very profitable businesses after buying his books.

Most don't give him credit... like the fellow building this [version of our HyZor](#).

Copying (without acknowledgement) is supposed to be the sincerest form of flattery but it's not honest.

[This one does](#) give George Wiseman credit and so [does this one](#).

The recognition is appreciated, except for the sale of a book or kit, it's all he gets from those businesses 😊.

All his fuel saving technologies have stood the test of time, Vested Interest suppression (*story told elsewhere*) **and customer satisfaction** (*less than 1% return rate and lots of sales from referrals*).

He was the first (by 10 years) to realize the need for **Combustion Enhancement Interface Technology (CEIT)**. He developed the first practical CEIT, like the [Carburetor Enhancer](#), and the [EFIE](#) (now a standard in the fuel-saving industry).

He has developed the world's most efficient and practical commercial BG electrolyzers (WaterTorches) and has sold hundreds of them worldwide.

ER1200 WaterTorch independent efficiency test results <http://www.nationalhydrogenfoundation.org/news.html> ([without measuring heat energy produced](#)). ER1200 WaterTorches operate at 175°F in 70°F ambient.

He has spoken on many talk shows and presented his technologies at Conferences around the world.

He is a leading force for the practical development and implementation of Eco-Sustainable Energy technologies.

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