secondary windings help
Posted by: "Bob Boyce" bobboyceh2o@yahoo.com bobboyceh2o
Wed May 14, 2008 2:38 am (PDT)
Hello Patrick

It has been brought to my attention that there may be some information missing in the toroid winding calculation instructions. The ratio is not calculated using the full DC power supply voltage.

The correct procedure is to build the cell stack, cleanse and condition until the cell stack reaches at least 150% but preferred 200% or more faradic power efficiency. Then allow the cell stack to cool to room temperature. The cell stack is then powered up with a variable voltage power supply and adjusted until cell current is right at 2 amps... at this point write down the exact voltage, and be quick before the cell starts to warm up. That would be the voltage used to calculate the windings ratio as outlined, not the full rectiified and filtered power supply voltage.

That voltage is then divided by 4 (25%), and the product is divided by the typical primary supply voltage (usually 12.5) to produce the final secondary to primary winding ratio. It will typically fall into the 3:1 to 3.5:1 range. This calculated number of primary turns is rounded up to the next full turn and used as the number of turns for each one of the 3 primaries.

If the turns are off optimum by 1 turn, tuning can compensate. 2 turns off optimum and it is possible, but unlikely that it can be tuned. 3 turns or more off optimum and forget it, impedance will be too far out of whack to tune.

Hope this helps

Bob

What is to be avoided is electrodeposition. With 316 stainless steel, at abov e 0.50 amps per square inch, the metal will begin
to erode from one electrode and electrodeposit upon the other at a fairly rapi d rate. Going higher in current speeds up this
process even more. At lowered current densities, it would take years for this to happen. The target to shoot for is 0.25 Amps per

square inch or less. You would never want to exceed 0.50 amps per square i nch in any case.

In calculating active surface area for current density purposes, you only cou nt one electrode of one cell, and if they are uneven
in size, the surface area of the smallest is the one to use for your calculations .

Keep in mind that this current density limit applies to every part of the exp osed surface. This is why exposed sharp edges will
erode, even if there is enough total surface area to be under the minimum. Th is is because the current density at those sharp
points is well above the limits. Only active surface area counts. This is on e reason why the spacing between electrodes must be
even, and the electrode surfaces properly prepared (deeply crosshatch sanded) throughout the entire active surface area. Sharp
points such as exposed plate edges, will hog current. These rapidly erode, and the rest of the surface area will be largely
ignored until the current hogging points are eroded away. In my designs, I al ways bury the plate edges in slots or under gaskets,
so the crosshatched plate surfaces themselves are all that can be active.

Bob

Current density does affect heating. The current density guidelines are for straight DC systems, not resonance drive systems.
Resonance drive systems operate at as low as 10% of the current requireme nts of the straight DC systems, yet produce much more
gas than straight DC. In fact, resonance drive systems can have more cells f or a given supply voltage than straight DC systems
would.

In resonance drive systems, the application of power beyond the minimum r equired only adds to heating. Sometimes the heating can
be a benefit, such as in cold weather where you may want to keep things fro m getting slushy. But in most cases, it just wastes
power.

You may want to do a search on the cell preperation, cleansing, and condit ioning steps. Even though you may want to run a unit
at resonance (near 1.5 VDC per cell), initially you will need to be able to ru n it at or slightly above 2 VDC per cell to clean

the electrode pores out thoroughly, and then condition at about 2 VDC per c ell. These steps are very important in order to break
in the electrodes, and to prevent contaminant buildup from occuring in or un der your catalytic layers. A good catalytic layer is
important to peak cell efficiency, even for resonance.

- room temperature superconductor
- monoatomic
- singularity
- won't bond with itself
- non polarized (or really, dipolarized, opposite poles facing the same directi on, creating the bond within itself, leaving
no bonding to another element)
- cooper pairs
- right hand, left hand spin
- scalar potential (electrical signal of ormes)
- a collapsing magnetic field produces a temporary "scalar like" energy poten tial

Key - A collapsing magnetic field produces a lopsided scalar wave in a norma l winding. It needs to be straightened out to 90
degrees instead of its tendency to be about 80 degrees. Balance is the key. Two apposing angles give a third equalization. Look in
the mirror.

Key - What does a square wave produce?

Key - in order to have a concentrated electromagnetic field, you need to mak e a ?

1W / litre

With Bob's design, I believe 3 separate wave forms are introduced into the c ell stack. What I don't understand about this design,
is why multiple waves of electrical potential and current don't just maintai n cell voltage? I'm not sure how to describe my
confusion, but it seems as though if you have a bunch of switches all conne cting a 12V power source to a single voltage meter
(in parallel), and there is a monkey at each switch turning it on and off (be ar with me here), would the voltage meter not just
read a constant 12V between all the switches turning on and off? Can there be multiple voltage frequencies presented over a single

circuit? I understand how the Chambers' circuit allows one frequency over t
he plates, and one frequency over the coil. I know I'm
demonstrating my extreme ignorance of electronics at this point, and I apolo
gize.

Those 3 sources of pulsed DC are not applied directly to the plates, so thei
r potentials do not directly add into a smoother DC
potential. If they were directly connected, then they would not be capable of
causing the reaction that they do.

Bob Boyce wrote:
Simon wrote:
also how thick are the plates you used? in the past ive been using .9 - 1mm th
ick steel.

I used 16 guage (1.5mm) plates with 1/8" (3mm) spacing but thinner plates w
ork just fine. As long as they are rigid enough to
keep their shape.

Simon wrote:
Bob just a question about your 6 channel PWM generator board.... what is
the difference between that and the PWM3E? Are these able
to be bought as a kit?

The 6 channel (HexController) is essentially a tiny computer that can be pro
grammed as desired. I felt it was necessary to use
feedback to fully automate control of the resonance reaction in order to si
mplify operation of the unit. The PWM3 is a manually
tuned version that uses control potentiometers to set pulse width (duty cycle
) and operating frequency of each of the three channels.
At this point, kits are not yet available for the HexController, but maybe soo
n they will be available as kits or complete and
tested units. I have published enough information for the PWM3e, and provid
ed the PCB files so that those can be duplicated if
desired.

drewsky, leakage current can be a big problem in series designs, so I underst
and your plight. I had to battle with that problem in
my earlier designs as well until I found the deep slot solution. The sealed cel
l does help alleviate some of those issues, and it

sounds like you came up with a novel solution to the filling issue. I had told Kevin to try thin stainless wire, like that used for welding 316 stainless with wirefeed welders. The hot pin through the gasket is a really good idea. You may need to put a loading resistor on the pin to make sure you are measuring actual fluid level and not just wet film on the inner surface of the flexible PVC. Let us know how it all works out.

Well, we are both right actually. In Stans early work, he announced that he used tap water, and he used split phase. In his later work, in order to solve certain issues with stability and feedback, he went to distilled water and 3 phase. Almost everyone trying to read up on and duplicate Stan, are looking at his early work, and not the latest stuff he did.

About the scalar, light, as well as other forms of vibratory energy, contain scalar as well as non-scalar components. When I said light is not scalar, I mean it is not purely scalar. To convert it to purely scalar energy, you can use phase cancellation to remove the non-scalar components. There are many ways to do this. A few researchers are experimenting with faster-than-light scalar communications. Modulating/demodulating scalar beams directed at one another over great distances.

I think Einstein finally realized towards the end of his life that he made mistakes, and was working towards correcting that.
Like you said, Tesla had a pretty good grasp on the practical uses, but lacked a bit on describing how it worked to others.

The new sciences are beyond what is even covered in the quantum fields. Yes, most is still theoretical, but experimentation proves or disproves theory.

What makes it amazing to some, is that every living being exhibits a life force energy field with a unique pattern. Through experimentation, it has been proven that the energy fields of the people involved, as well as their mindset, can have a pronounced impact upon certain experiments. This means, that all other things being equal, someone that is firmly skeptical can prove that a certain experiment will fail, while another person that firmly believes in the experiment can prove the exact same experiment is

a success.

My energy field is highly polar, which means that I have a large degree of success when working with electrical energy. It also means that I feel electrical shocks more strongly than most others, and I am more prone to getting nailed by lightning than most others. This highly polar tendency is probably what contributes greatly to my success with the resonance reaction.

As long as you keep thinking along the Meyer trend, you'll go nowhere. You cannot stabilize that sort of system, that is based on chokes, inductors, and water capacitance, for any long term use. This was exactly the problem that Stan had with it. Water varies too much to get any predictable outcome with a resonant inductor alone.

Start thinking transformers and then by applying control to the input, you can directly control the output. Another thing, toroids do not come wound to the specs needed. You will either have to wind it yourself, or have one wound for you.

You may want to look at my toroid projects, I added to them today to show what you do to turn surplus toroids into usable cores.

Bob

2008004024

Hello David

I think you are the first to actually mention in the group that this technology may go beyond fracturing water, and you are quite correct! I usually refrain from getting into much detail about these other aspects of the energy use in these forums, as it is ongoing research.

It is a function of the very sharp voltage gradient transitions that "pluck the strings" of the HV dipole and cause this interaction with the dominant energy fields within and surrounding the core. In this manner, the core behaves very much like a Tesla device known as the Magnifying Transmitter.

The perturbed HV dipole itself within the silver plated secondary is also what gathers the modulated longitudinal energy (LEM), but only

that energy that is modulated at the same exact frequencies and "digital" pattern as that transmitted. This is the selectivity that Tesla discovered and patented in his wireless transmission of energy device(s).

The gain of the receiver device is determined by the intensity of the HV dipole used for collection. Thus, in order to use this received energy, one must ensure that the energy is not wasted by coupling it into unwanted ground paths, and to only couple the energy into the desired load(s). This is where the chokes and impedance matching come into play.

This energy is radiant in nature, and can be either used directly in devices that can operate directly from radiant energy, or converted into transverse energy via a number of methods. The trick is in getting the most energy conversion efficiency possible with the chosen method.

Water absorbs this radiant energy very efficiently, IF the water is entrained, AND if the energy falls within a couple of very specific passbands. The widest being in the near 40 to 45 Khz region, with the peak efficiency falling near 42,800 Hz. The key to getting this to occur is to set up standing waves in a manner that produces impulse peaks and nulls within the solution at the points where these waves collide. This is why uniform distances between plates is so absolutely critical.

So, what else can we do with this energy? Well, not only can we split water, but we can convert this energy into transverse energy and charge up batteries or capacitors, then run loads. We can also directly light up neon or flourescent lights, run certain HF inductive loads, arc lamps, or just about anything that will run directly from "cold electricity" . What we cannot do is measure this with a voltmeter or ammeter, or use this "cold electricity" in most devices designed to run on transverse (normal) electricity until it has been converted. Great strides have already been made in this energy conversion, but much research is yet to be done to increase the conversion efficiency.

I hope this answered your questions.

Bob

--- In Hydroxy@yahoogroups .com, "David Parker" wrote:
> I am curious about this. If my questions have already been
> answered please just tell me to go do some more reading.
>
> Is the longitudinal energy being attracted by the core
> windings, or is some of it being attracted by the cells?
>
> Would it be possible to step down the voltage with a
> secondary core and still retain the longitudinal energy?
>
> Are the frequencies used selected to attract more
> longitudinal energy or are they selected because it causes
> the water to break up with less energy?
>
> Are there any other applications that you could safely use
> your electronics in other then Hydroxy?
>
> David

Many are confused by the inverted polarity of the switching. The FETs are switching negative, not positive. So a short duty cycle pulse will appear on a scope as a long duration positive, with very short negative-going pulses. It looks to be this matter of confusion that is causing you to be feeding extremely high duty cycle pulses instead. That could very well blow the FETs.

Re: PWM Board Output

Just a misunderstanding of how the system is wired. The PWM3F board only outputs a voltage due to the pullup resistors for the output indicator LEDs. This is mainly so that the board can be tested and preliminary tuned without connecting to a toroidal transformer.

The PWM3F outputs are not voltage / current sources, they are current sinks. In other words, the +13.8 VDC is applied to the common junction of the 3 primaries, and the GROUND return path for each of those primaries is made through each of the output terminals of the PWM3F board. This is why the ground return (-) wire connected to the PWM3F board must be a very heavy guage wire.

While not documented in the system drawing of D9, you may notice that

there is mention of chokes in the text. These are to prevent LEM flow from taking the path of least resistance into and through the power supplies. Do not leave these out! Two are used in the 160 VDC connections, one at each side of the 160 VDC spply, and one is used for the +13.8 VDC supply.

The common configuration is to supply your potentially heavy current +13.8 VDC to the toroidal transformer primaries common by first passing it through a 20 amp fuse or DC rated breaker such as a Square D QO series (preferred), through the contacts of a heavy duty relay rated at 20 Amps or more, then through a heavy choke (Radio Shack sells them), then to the triple primary tie point. Power to the relay coil (be sure to put a protection diode across the relay coil) is switched by the same fused and switched power connection that feeds power to the +13.8 VDC input on the PWM3F board.

Bob

Posted by: "Bob Boyce" bobboyceh2o@yahoo.com bobboyceh2o
Wed Nov 28, 2007 2:22 am (PST)

Maybe you're mixing things up? It was the old brute force marine units, and the later 60 cell series units that controlled pressure by switching off and on using a pressure switch.

Also the PWM3 series units supported a pulse disable connection that could be used to disable the primary pulse stream if an overpressure switch trips. That did not kill power, only the primary pulse stream, which effectively shut down mass production while keeping the cell voltage stable, so it would not heat up or cool down while disabled.

The HexController did not operate in that fashion. It did not use an on/off pressure switch, it used a pressure transducer as part of the feedback loop sensor array. It is up to programming how to implement that feedback.

My favorite implementation was to use pressure transducer output to vary the relaxation delay between pulse string sequences. If looked at on a frequency counter, it would look as though the frequencies of all 3 channels were being changed, but that is only because a frequency counter counts pulses over a set period of time. The pulse streams out of a HexController has series of pulses that are in fixed relation to one another with fixed intervals. Once a cell stack is

tuned to "frequency", which is actually a specific pulse train timing, that timing changes very little, and only in response to electrolyte density.

The pulse durations are hardly ever changed once they are locked onto optimum for a given cell stack system.

The timing of each series of pulse sequences results in predefined sets of pulse intervals within each sequence, and a delay between sequences. These relaxation times can be adjusted slightly to vary production. This is MUCH more effective at varying production than varying pulse width without wasting power. So we can look at it as slight variations in phase between the individual phases within a pulse sequence,which I called "twist", and larger opportunities of missing pulse time (relaxation time) between pulse sequence sets.

I hope I'm not confusing anyone here, please try to bear with me. i am not always very good at explaining things in ways that everyone can understand.

Frequency is set by not having any phase shift (twist) or sequence delays (relaxation time) set, and tuning the unit timing for maximum production at the least power consumption. After timing is set, then the sensors can be brought online. The temperature sensor provides feedback to adjust pulse timing (not pulse duration) slightly. This can compensate for density changes in the electrolyte.

With any given jump in pulse timing due to temperature compensation, we can fine tune operation for that given timing by adjusting the phase twist slightly. So we really want to leave that variable alone, and use it solely as a means of "fine tuning" for operational changes due to temperature and electrolyte conductivity.

Relaxation time between pulse sequencews can be adjusted to control volume of hydroxy gas production on the fly. This can use pressure, flow, and demand (throttle position) all as inputs to determine optimum hydroxy gas production levels.

I should also add... Anyone looking at a frequency counter would mistakenly assume that frequency is changing while adjusting the relaxation time, when really what is changing is the dead space between sequences, and to a much lesser degree the phase relationship

between the 3 channels.

Did this help?

Bob

Posted by: "Bob Boyce" bobboyceh2o@yahoo.com bobboyceh2o
Wed Nov 28, 2007 4:16 pm (PST)
It just means that you do not understand the forces at work in this system. This technology is based on the Tesla Magnifying Transmitter principle, and combined with an integrated energy receiver. This combination creates a toroidal power system that takes advantage of the energy gain inherent in the Tesla wireless transmission of power technology.

The drive energy is not connected directly to the cell at all, and is not what makes the hydroxy gas, so duty cycle does not directly drive hydroxy gas production.

The drive energy is a trigger that sets up a modulated resonance in the local longitudinal energy field, ie TEM -> LEM. It is the stronger modulated longitudinal energy that is received and channeled into the cell via the toroidal transformer, ie LEM + TEM -> water. Since the drive energy is only 20 to 25% of the total received energy, duty cycle changes have very little effect upon the total output energy. Duty cycle has absolutely no effect upon longitudinal field modulation level, as it is the rapid switching transitions, not the duration of the pulses that causes this TEM <-> LEM interaction.

Hope this helps

Posted by: "Bob Boyce" bobboyceh2o@yahoo.com bobboyceh2o
Thu Nov 22, 2007 11:29 am (PST)
I agree, the waveform coming directly out of a simple 555 circuit would not be able to deliver short enough pulse widths. This is why each frequency generator stage is followed by an adjustable pulse width control circuit, and those are followed by signal processing / FET driver stages that shorten pulse width even more. The outputs can be adjusted so short that the FETs do not even have time to fully turn on!

In the real world, lowering gate capacitance of the FETs is not a

viable alternative. As you lower gate capacitance, you also tend to lower the voltage and current capacity of the device. Lighter duty FETs will not withstand the abuses that the FETs will be exposed to in real world operation. The alternative is to use the right FETs required to handle the operational specs, and use FET drivers to compensate for the increased "Miller Plateau" current. In the PWM3E and PWM3F series, this task is handled by the same digital chip that replaced the opto-isolator in the earlier versions. The operation of the chip output is inverted, so do not mistakenly assume (like chemelec did) that the chip sources the drive voltage / current to the FET gates.

Stability is a function of the components used. The parts spec'd in the parts list for the PWM3E and PWM3F will result in excellent stability, for the bench test application these were designed for. On the boards that I build, I actually use higher precision (1%) timing caps with even better temperature stability than those in the parts lists.

Not everyone can afford to buy 3 off-the-shelf signal generators that are accurate and stable enough for this application, and capable of narrow enough pulse width. The majority I found on eBay are limited at 10% or even 20% duty cycle, nowhere near narrow enough! Over the past couple of months, I have obtained at least half a dozen high end (original cost of $4K to $6K US) HP and Wavetek waveform and pulse generators from eBay sellers. In testing these units, while stability is excellent, many of these have limitations that cause them to be unsuitable. Besides the pulse width limitation on almost all except the pulse generators, output ringing into the FET gates was so bad that the effect was lost when driving the windings. The relatively simple PWM3F outperformed most of these used high end units that cost a few hundred dollars each from eBay.

Just so everyone knows, I have designed a new PWM3-G controller PCB. This is a totally new board layout with a new parts list, and uses a (new product) higher performance set of FET drivers. Once the boards have been tested, and if they meet my specs, these new boards will be made available directly from myself and Hydrogen Garage.

Bob

Posted by: "Bob Boyce" bobboyceh2o@yahoo.com bobboyceh2o
Sat Nov 24, 2007 8:38 am (PST)
Yea, and even that MOV can be left out if input power is stable. It's only a protection device after all, not critical to operation. The 4 ultrafast diodes do a really good job all by themselves.

--- In WorkingWatercar@ yahoogroups. com, "linesrg48" wrote:
> Bob,
> I assume you're using P3840-ND (0.0047uF), P3848-ND (0.01uF) and
> P3856-ND (0.022uF) now then?
> I just had a look at the DigiKey site and had to laugh. They have
> obviously responded to people ordering the MOV's by upping the stock

> level by 3000 and now you're saying we all only need the one - ha ha.
> Looks like I'll have 3 UBG ones very shortly once I've broken the
> soldering iron out when I get back home in 2 weeks.
> For those memebers (or prospective ones) in the UK/ EC area I have
> ordered some rolls of transformer tape and also pre-ordered 5 off
> toroids (these due sometime in January). I'll keep them on a shelf
> for if anybody needs them.
> Happy Thanksgiving to our US colleagues.
> Regards
> Richard

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3a.
Re: Fw: 41khz to 42 khz pulsed
Posted by: "Bob Boyce" bobboyceh2o@yahoo.com bobboyceh2o
Sat Nov 24, 2007 9:02 am (PST)
Sure, if there is still interest for it. I keep hearing flak from so many people that they don't want something that requires then to learn how to program. They all seem to want something they can just turn pots and adjust. You are absolutely right, it's going to take complex feedback to maintain automated operation.

With all of the backwoods and backyard tinkerers out there on this planet, if the simple methods (such as the Dad Garrett carb I keep seeing mentioned) really worked as such an easy and long term solution, then they would still be in use today! The very fact that they have

vanished into obscurity means that they were obviously not viable enough to avoid suppression. More complex systems are much easier to suppress.

Bob

--- In WorkingWatercar@ yahoogroups. com, "h2owalker01" wrote:
> Bob,
> Are you still planning on coming out with a hex controller sometime
> soon? Is your new PWM3G still primarily for bench testing? For car us
e
> won't it be necessary to incorporate circuitry to lock on to a
> changing resonant frequency?
>
> h2owalker

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3b.
Re: Fw: 41khz to 42 khz pulsed
Posted by: "Bob Boyce" bobboyceh2o@yahoo.com bobboyceh2o
Sat Nov 24, 2007 9:37 am (PST)
You'll find that low nanosecond pulses will probably be too fast for most power FETs. Depending upon the FET and driver used, you will find that you may need .5 to 5 microseconds of pulse width to get a satisfactory response output. Transition time is more important than pulse duration, as it is transition time that performs the usable energy. Pulse duration just affects how much power is consumed, and does not really increase power output much when properly tuned. So pulse duration is not a viable way to control gas production. We want to get full off-on-off transitions with the least amount of pulse duration as possible.

It all really depends upon how you design the PCB and your choice of driver / FET. The best results are to be found with good high impulse (6 to 9 amp) power FET driver chips, fast (low ESR) caps right at the driver chip power pins, short driver power / output traces, really heavy power rails, and did I say lots of low ESR caps? On the HexController board, I use over 60 low ESR type SMT (surface mount) caps, and almost all of them (54) are soldered to SMT pads right at the power pins of the driver chips. Despite the temptation, do not

use SMT driver chips, as driver chips can be prone to failure when stressed to these fast specs. It's much easier to change them when they are socketed. Take this advice from experience!

Bob

Bob Boyce" bobboyceh2o@yahoo.com bobboyceh2o
Mon Oct 29, 2007 4:27 am (PST)

Hey Don, did you use the latest parts list? The timing caps have been changed in value since TI recently changed chip sources. The new chips tune GREAT, if you use the right timing caps. C1 has been changed to a 0.0047 uF, C3 has been changed to a 0.01 uF and C4 has been changed to a 0.022 uF. The parts list has been updated to reflect these changes

Also, several resistors (R4, R5, and R6) have been changed in value (from 10K to 1K) to improve timing response, with 3 resistors (R7, R8, and R9) being replaced with jumper wires. This is not absolutely required, but it will improve performance.

Anyone having trouble dialing in frequencies (because the readings jump around a lot when trying to adjust tuning, especially on the 42.8 Khz channel) can wire in panel mounted 1K fine tune potentiometers to replace the 1k onboard series resistor(s). These onboard resistors are R34 for the 42.8 Khz channel, R36 for the 21.4 Khz channel, and R36 for the 10.7 Khz channel. Set the fine tune pot to center, adjust the onboard Hz trimpot (R24, R26, and R28) to as close as you can get them, then adjust the fine tune pots to dial the frequencies right in. If you want really fine tuning control, use 10 turn precision pots for these fine tune controls. It sure makes tuning easier for those that lack finesse in making tiny adjustments to finicky trimpots ;-)

Bob

Posted by: "Bob Boyce" bobboyceh2o@yahoo.com bobboyceh2o
Mon Nov 5, 2007 11:16 am (PST)

I used a shunt in between the cell and power supply ground as a cell current sensor. A shunt can be placed between power supply ground and the FET Source common bus to read toroidal drive current. These shunts deliver outputs in millivolts that can be read by ADC inputs. The sensor leads MUST be very well bypassed to protect the ADC inputs.

Another option that works real well for reading toroidal drive current is to use the board traces as a shunt. Just sample the voltage drop caused by the rail feeding the FET Source common bus. Easy enough to calibrate. I provided a balancing rail on the HexController specifically for that purpose. It connects all FET Source leads together, independent of the heavy power supply connections that feed each FET source connection. This balancing rail allows a more even distribution of voltage drop amongst all FETs for sampling current flow through the FETs.

Pressure transducers are capable of providing feedback as well. There is a picture of one of these made of stainless steel in my photos folder on this site. It runs on 5 VDC (The HexController has regulated 5 and 12 VDC outputs for running remote sensors), and provides a variable 0-5 VDC output based on pressure level.

Bob

--- In WorkingWatercar@ yahoogroups. com, "aaajbell" wrote:
> Brett,
> My theory (it is only theory) is that you can measure amps with an
> inductive pickup to get the most immediate measure of resonance. I
> suspect it would be more immediate than gas flow or pressure.
>
> At resonance you would expect there to be higher fuel production, so
> there are more bubbles on the electrolyser plates. With more bubbles,
> there should be less effective electrolyser plate surface area. With a
> change in effective surface area, there should be a change in
> resistance through the cells. A change in resistance should cause a
> change in amps. Amps can be measured with an inductive pickup.
>
> When I get a Bob Boyce cell built capable of resonance, I want to do
> that particular experiment first. Maybe someone with more means can
> do it first. The frequency analysis mode of the software will generate
> frequency vs sensor volts on the serial port. That data can be
> captured with HyperTerm or other terminal emulation software on a PC.
> The data can be easily plotted using Excel. With a plot, you can
> visually tell things like how accurately you need to track

frequency.
> A plot uploaded to this and other watercar groups would tell us all
a lot.
>
> What other sorts of sensors could be used to track resonance?
>
> - aaajbell

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Mon Nov 5, 2007 10:27 am (PST)

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Uploaded by : bobboyceh2o <bobboyceh2o@ yahoo.com>
Description : 20 Mhz AT-Mega48 based PWM Demonstration program. Allows easy testing of all 6 PWM channels

You can access this file at the URL:
http://groups. yahoo.com/ group/WorkingWat ercar/files/ Bob%20Boyce% 20Project/ HexController% 20Files/M48- PWMdemo.bas

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Regards,

bobboyceh2o <bobboyceh2o@ yahoo.com>

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File : /Bob Boyce Project/HexControll er Files/PWM3Emul8. bas
Uploaded by : bobboyceh2o <bobboyceh2o@ yahoo.com>
Description : 20 Mhz AT-Mega48 based HexController Basic PWM3 Emulation Program. Generates 42.8 Khz (ch1a), 21.4 Khz (ch2a), and 10.7 Khz (ch3a)

You can access this file at the URL:
http://groups. yahoo.com/ group/WorkingWat ercar/files/ Bob%20Boyce% 20Project/ HexController% 20Files/PWM3Emul 8.bas

To learn more about file sharing for your group, please visit:
http://help. yahoo.com/ help/us/groups/ files

Regards,

bobboyceh2o <bobboyceh2o@ yahoo.com>

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3a.

Re: laser cut plates is a no-no
Posted by: "Wayne" cwaugs@yahoo.com cwaugs
Mon Nov 5, 2007 4:46 pm (PST)
Very cool just tryin to dodge mistakes :)

(I was just going from kevinscatterfield' s post from OUpower :)
copied a couple posts from the thread in OU below)

BEGIN QUOTE
>>>>you will probably regret have'n that sheet laser cut.Bob went thru a batch of laser cut s.s. and they ended up be'n good for just boosting.I don't know if you could have em annealed and fix em or not.A magnet would probably do as a simple test.

glenn_aircooled
Regular Poster
Posted: Thu Oct 04, 2007 5:27 pm Post subject:
--

Kevin - whats the issue with laser cut?
Is it heat
Glenn.

kevinsatterfield
Regular Poster

I guess so, Bob said it ruined a batch of his plates and Sid said it magnetized his or Sid said his lasor cut plates were attracted to a magnet.

END QUOTE

--- In WorkingWatercar@ yahoogroups. com, "Bob Boyce" <bobboyceh2o@ ...>
wrote:
>
> --- In WorkingWatercar@ yahoogroups. com, "Wayne" wrote:
> > laser cut plates is a no-no acording to Bob it messes with the SS
> > properties. HTH Wayne
>
> Plasma or flame cutting is what does the worst damage to plates. With
> laser cutting, if done quickly and properly, heat damage is usually
> confined to the very edges that are typically buried in the slots.
>
> Bob

>

Bob Boyce" <bobboyceh2o@ >
> wrote:
> > Another option that works real well for reading toroidal drive
> > current is to use the board traces as a shunt. Just sample the
> > voltage drop caused by the rail feeding the FET Source common bus.
> > Easy enough to calibrate. I provided a balancing rail on the
> > HexController specifically for that purpose. It connects all FET
> > Source leads together, independent of the heavy power supply
> > connections that feed each FET source connection. This balancing rail
> > allows a more even distribution of voltage drop amongst all FETs for
> > sampling current flow through the FETs.

The problem is with the sample rate, which sounds like 22 Khz in your case. In A-D or D-A systems, digitizing or reproduction of analog waveforms using sample rates lower in frequency than the waveforms you want to reproduce just does not work. You need sample rates of at least twice that of the frequency of waveforms that you wish to reproduce. As you approach the sample rate, waveform distorion gets worst. When you surpass the sample rate, you only get bits and pieces of waveforms. Using analog inputs and outputs to reproduce digital waveforms just makes no sense at all anyways.

On another note, having a PC that close to a running toroidal power system is very likely going to result in data corruption in the memory and other storage devices due to EMI (electromagnetic interference) . Dedicated controllers need to be VERY well shielded to prevent this, PCs are not. One of the replicators had to move his experimentation out to his metal shop building, as it was trashing all of the PCs and network devices in his house every time he fired up the dedicated controller.

Bob

--- In Hydroxy@yahoogroups .com, Don Beckham wrote:
> Ok I did a sweep (on a Gateway laptop) last night from 1 - 48000hz to double check and I noticed a problem. I got a very consistant amplitude (voltage) from 1 - 18000. The amplitude started to decay at

18000 and pretty much flat lined at 21000Hz. These frequencies are dead on. Then I started getting a waveform again at 25000Hz+ but I am not not confident the the frequency is correct. I will confirm or deny this later. I will also be watching the output from a pioneer 150 Watt amp and a Kendwood 1000 watt amp to see what frequency response of each is.
>
> BTW: I installed the Gos files. I get an error when trying to run the Delphi program. But, Raga's demo for the activeX seems to work fine. I will post the exact error message later.

That is exactly what is required to get the frequencies precisely where you want them. You have to use interrupts instead of relying on the clocks and dividers. Using interrupts for custing timing is not usually covered in programming instructions anymore, that's why it is so commonly overlooked by "modern day" programmers. You must be an old-

school coder ;-)

Bob

--- In Hydroxy@yahoogroups .com, aaajbell wrote:
> Thanks for your response Bob. Maybe I'll try some interrupt programming to add or subtract a leap tick to get a more precise frequency. BTW, you are great American. We all value your inputs to these forums above all the others.
> - aaajbell

Frequencies must be capable of being adjustable down to a 1/10th of a Hz. Through the use of some undocumented programming tricks, this can be accomplished with a decent microcontroller. I use the 20 Mhz Atmel AT-Mega48 which I run at 20 Mhz, which for that particular chip is also 20 MIPS. Plenty fast enough for this application.

Bob

--- In Hydroxy@yahoogroups .com, aaajbell wrote:
> Thanks Bro Andrew,
> For those following this thread, I should point out that the PWM MC-12 circuit appears to be of a type controlled with an analog voltage. It probably uses 555 or 556 timer chips. The controlling analog input voltage to the timer chips may be susceptable to variations due power

supply voltage (i.e. the alternator kicks in) or due to temperature of the electronic circuit. I don't know how stable these are. Does anyone know how stable the frequencies generated by these are?
>
> The PWM controller from www.chapp.com appears to be a microcontroller circuit. The PWM is digitally controlled. When I looked deeper into their PWMs, they can be set up to operate at up to 20MHz. The clock tick period at 20Mz is 50 nanosecs. For instance; if you want to generate a 42800Hz frequency, you need to configure it for an exact interger number of clock ticks per cycle. 467 clock ticks would correspond to 42825.55Hz. 468 clock ticks would correspond to 42735.04Hz. When the clock is set for 20MHz, 42825.55Hz and 42735.04Hz are the 2 frequencies closest to 42800 that if is capable of producing. The difference between those 2 frequencies (i.e. the granularity at 42800Hz) is about 90Hz. The clock is controlled be a crystal oscillator so the PWM frequecies generated should be very stable.
>
> Does anyone know how close the PWM's frequency needs to be generated for a resonance HHO generation system?
>
> There is an LPC2103 microcontroller which operates at nearly 60MHz, so it would have a granularity about 1/3 of the one from www.chapp.com.
>
> aaajbell

Travin, this confusion is from an error in communication. You are saying advancing timing, when the description you gave is for retarding timing.

When you move a normal gasoline fueled engine "closer to TDC", you are retarding timing, not advancing timing.

Maybe this will clear up the confusion between you and cg. You are both correct in that timing must be moved towards, or slightly after TDC.

Bob
---
cg, I see where your understanding of the boosting process is going astray.

Firstly, my designs produce hydroxy gas, not hydrogen by itself.

Secondly, when hydroxy gas is added to the combustion chamber mix of fuel/air in normal hydroxy gas boost amounts, it does not require major retarding of the ignition timing. It does not just flash and burn away first, without doing useful work, leaving the hydrocarbon fuel to burn later. At boosting levels, hydroxy gas behaves as a catalyst, aiding in the cracking of the complex hydrocarbon molecule chains of gasoline or diesel fuel. This improves the combustion efficiency, giving a more complete burn of the available fuel in the fuel/air mix. Unburned hydrocarbon and carbon monoxide emissions go way down, while carbon dioxide and water vapor levels rise (due to more complete combustion). A normal catalytic converter becomes a hindrance at this point, as it is no longer needed to convert unburned HC and CO to CO2 and H2O. Hence, the fuel/air mixture can be leaned out and still deliver more engine output horsepower at less of a throttle setting. The richer fuel/air mix required to fuel the catalytic converter function is no longer required.

There is no mistake here, as many years of testing have been done, both on automobiles, and on over the road tractors. Testing on dynos, and in real life driving conditions. Testing where emissions were sampled, in before boosting and after boosting comparisons. Millions of actual road miles of testing. All of the test data proved that boosting with hydroxy gas is beneficial to both saving fuel, and cleaner emissions, with no major rework of the engine required. Engines last longer, stay cleaner inside, require fewer oil changes, and go further between rebuilds. All major pluses for the consumer, but not so for other industries that profit from the status quo.

The ONLY reason this technology is not more widespread is money! The catalytic converter market alone is a very lucrative business. One in which the upper level ownership is held by high level politicians that stand to lose a lot of profit $$$ if it were widely known that hydroxy gas boosting makes more economical and ecological sense. Think of the amount of fuel that could be saved globally, or even just nationally, if hydroxy gas boosting were to replace catalytic converters on every car and truck! We need the help of the auto industry to make this a widespread reality, as ideally, they would need to reprogram the engine control systems to take full advantage of hydroxy gas boosting, instead of fighting it as many of the existing modern engine control systems do.

Now if you are talking about running engines totally off of hydroxy gas, then yes that requires a lot of ignition system and timing changes in most vehicles. Waste spark would have to be dealt with in most modern distributerless ignition systems, and in order to maximize engine efficiency, water fog injection and valve retiming would be required. But the result is well worth it, as a purpose-built or purpose-rebuilt hydroxy gas engine can deliver double or more the combustion efficiency of a production level gasoline engine. This is not speculation, this is first hand experience with real dyno results.

Governments, and the energy industry, are not ready to give up the death-hold grip they have on the almighty energy dollar profits. They just burn down anyone that tries to stand in their way, and I am tired of the fight. I have given up on trying to make this all happen within my lifetime.

Bob

--- In Hydroxy@yahoogroups .com, "cg" wrote:
> Bob,
> Yes, we do agree that (and let's start where we agree and work our way thru this):
> 1.. Timing must be retarded for hydrogen fueled ICE and for Travin's benefit, this means something more that 1 or 2 degrees ATDC, probable about 5-degrees ATDC and if the engine is mechanically stressed retard more.
> 2.. If the ignition is fired at 5-degrees ATDC, the H2 detonates immediately, the gasoline starts cooking and could be ready at about 25-degrees ATDC but now the chamber pressure dropping rapidly, by 35-40 degrees ATDC the power stroke is more or less completed. Very little if any power was added the crank.
> 3.. So the hydrogen phase of the burn, about 2% by volume products almost no power.
> 4.. The gasoline phase of the burn products almost no power.
> 5.. You must retard spark (to 5-degrees ATDC) to ocommdate H2 phase burn and any power you have gained in the H2 phase burn is LOST in the highly retarded gasoline plase burn.
> 6.. With item 3 and 4 producing almost NO energy, it doesn't sound like it works.
> 7.. I have said, and others have said burn H2 or gasoline but not

both at the same time. Bob, I know your technology only uses hydrogen and I know of at least five others, that work on H2, HOH alone, but there is not one (not one) booster working.
> 8.. Most of the member of this group are very dedicated and want so badly have a workable technology, they are trying wish this (or any) technology into existence.
> 9.. Bob, maybe you should formed a team about 10-researchers too decide on a reasonable technology and take it from concept to market. Think about it, their concept, their design, their engineering, their manufacturing, their marketing and their money
> Regards, CG

Hello Renaud

Yes, I discussed the windings over on the overunity.com forum. There is a g roup of replicators there working on it. Shutting it down requires a smart controller, and there are a couple of guys over there working on smart cont rollers. Most of the guys there already have some experience working with r eplication attempts of the Steven Mark TPU, so hopefully they already under stand the potential dangers involved.

Also, I have recently worked up a totally new version of my HexController, and will soon be publishing a public domain version of that as well. I wish to stress that this new version is designed for energy experimentation. It cannot convert a hydroxy gas core into a full-fledged energy core, as the hydroxy core does not have the additional control windings. The additional windings are to be wound beneath the secondary winding in order to have the most impact and control.

Bob

Posted: Fri Sep 07, 2007 1:34 pm Post subject: Reply with quote

Simply put, power density. The more physically massive the core, the greate r the power density that can be extracted with it. For example, say that a 10 pound core based system can generate 2 additional kilowatts. Using the l ogic of scale, it would seem that a 1 pound core system should generate 200 additional watts, but that is not the case. A 1 pound core based system ma y only be able to generate 50 additional watts. As the mass of the core dec reases, the amount of input energy increases for a given amount of output e nergy.

The T650-52 is not that big of a core. It is only 6.5" in diameter, which is

a bit on the smallish side for a full sized 100 cell hydroxy gas system. It j
ust happens to be the biggest core made by MicroMetals Inc.

Bob

Posted: Thu Sep 06, 2007 8:52 am Post subject: Reply with quote

It can only drift past it, not stay locked on it. Also, it is missing one key
ingredient, a bias coil that initiates and controls the intensity of a vorte
x once the phases are locked. Merrily drifting around in phase cannot initiat
e this dangerous condition. However, extended operation at locked 120 degree
phase differential CAN result in an accidental unintentional and uncontrolled
vortex formation.

Without the control coil to contol this condition, it can quickly turn into a
severely intense and uncontrolled vortex. Try to think of it as an electroma
gnetic tornado at this point. The presence of the HV bias potential initially
enables energy collection to occur. This feeds the vortex, causing it to inc
rease in size and energy. Once a vortex forms, it also begins to self-feed fr
om the LEM energy pouring through it from the earth-ionospheric cavity. At so
me point, the energy collection becomes so powerful that it overrides the HV
bias requirement, and cannot be shut down by simply turning off power to the
device. This is when it is considered to be in runaway, and the energy will r
ise until it results in an avalanche that will destroy the device and everyth
ing around it.

The danger lies in not being aware that a vortex has formed. Without specia
l windings, known as longitudinal windings, one cannot normally detect that
this condition has occured, and shut down the system before it reaches the
runaway condition.

Bob

Posted: Wed Sep 05, 2007 7:13 pm Post subject: Reply with quote

When you split the gases at production (ducted electrolysis), you introduce
a shitload of efficiency loss. So despite the best constuction practices, yo
u would not be able to deliver enough hydrogen on demand to be useful. These
type of systems are better suited to producing hydrogen and storing for lat
er use.

The most efficient forms of production produce a hydrogen/oxygen gas blend.
Splitting the gas after production may be an option, if it does not produc
e too much backpressure.

Water fog injection is not providing water as a fuel, it is for slowing dow
n the pressure pulse on the pistons. With this, hydroxy fuel more closely e
mulates slower burning fuel such as gasoline. The water fog flashes to stea
m, which absorbs combustion heat and slows down the otherwise fast pressure
 pulse. The resultant steam prolongs the pressure impulse to the piston.

Bob

Posted: Wed Sep 05, 2007 11:47 pm Post subject: Reply with quote

Reads like a bunch of marketing hype to me! Hydroxy gas is way more powerfu
l than straight hydrogen. The only advantage of hydrogen only boosting is t
he easy solution to the O2 sensor problems. Efficiency is the biggest issue
. You can't scale up just by adding units, as how are you going to be able
to power all of those? Tow around a fossil fueled genset? An alternator can
not put out enough to generate at such poor efficiencies to run the engine.
 Boosting is a different story, but you don't need a $400- $500 unit for th
at when a $50 unit can do the same thing.

Anyways, I am through with this thread. I suggest you read, this is all old ha
t.

Bob

Posted: Wed Sep 05, 2007 6:58 pm Post subject: Reply with quote

Tesla spoke of a weaponized aspect of this technology, commonly known of a
s the Tesla Death Ray. This is how dangerous intentionally triggering aval
anches can be. Instead of sending the energy to a remote target, an avalan
che calls this energy down upon YOUR location. We do not know how to steer
 or direct this energy on a macro scale

Tesla apparently did not leave behind any public information as to the mean
s of limiting the scope of power avalanches. This may have been part of the
 information confiscated from his hotel room after his death.

For those so interested, intentionally triggered energy avalanches have bee
n measured at currents in excess of 200,000 amperes.

Grizli, the reason I did not mention the phase issue danger before was becau
se the PWM3 series was intentionally designed specifically NOT to be able to
 generate a phased waveform that could be dangerous. This was also the reaso
n that I had not released a public domain version of the precision phased co

ntroller such as the HexController to the waterfuel crowd. I did not, and st
ill do not, want to be responsible for the injury or death of experimenters
that are so eager for results that they will throw all common sense or safet
y precautions out the window.

Bob

Posted: Wed Sep 05, 2007 10:06 pm Post subject: Reply with quote

What you are referring to is a sort of Faraday cage. While this will work t
o contain, or conduct TEM (Transverse Electromagnetic) energy around someth
ing, the LEM (Longitudinal Electromagnetic) component will pass right throu
gh a Faraday cage unattenuated, and can induce a like TEM response in the e
nergy void on the other side if favorable conditions are met. There is no e
asy way of shielding against LEM energy, so precautions need to be taken. D
espite this, I still certainly would not experiment with this stuff if I we
re not inside of a well grounded metal building Wink

Bob

Posted: Sat Sep 01, 2007 9:23 am

AlaskaStar,

Yes, pulsed discharge, as in dipole charge managemant. Output charge potent
ial to a cap, allow inrush from the ambiend,
then tap some of that charge away to power a load. Takes some fast switch
ing Wink

I feel the same about those freebie email services. By using those services,
you are agreeing to giving them license to
everything sent or received through their service. I usually only use them to
send alternate contact info through.

I had to change phone numbers last week. Some hospital billing idiot screwe
d up the secondary insurance billing on one of
wifeys hospital bills from last year, and she began calling us daily wanting
US to help her fix the billing screwup. We
talked to the secondary insurance as requested, and we were told that the hosp
ital must fix it themselves, as there is nothing
that WE can do. If we were to pay it (not that we could afford to), we WOU
LD NOT be reimbursed as the billing idiot claims. The

hospital then turned it over to a collection agency as well, and after months o f this, we got tired of the bullshit calls. Nothing
like several calls a day from some machine that says "Please hold for a repre sentative" then hangs up on us. I reported this to the
phone company annoyance call center and they can't help, as *57 does not wo rk for that number. So... the only way to be rid of the
crap calls was by changing our phone numbers. Oh, and MY number was only listed as an emergency contact, as wifey has her own number.
But NOOO, when wifey finally got annoyed enough to turn the ringer off on her phone, they started calling my line! So now, we won't
give our numbers out to ANY doctor or hospital. Idiots!

I don't renenber if I sent you one of my still active email addresses in that email I sent to you. A couple of them I do not check
but once a month or so, due to someone publishing one of them somewhere where the spammers got it. I wish people would STOP posting
my email addresses on open forums! I get tired of having to keep changing m y email address aliases. I never give out the primary email
addresses anymore for that reason. I will go fire up that other PC and see if there is any email from you waiting there.

Bob

Posted: Sun Aug 26, 2007 4:16 pm Post subject: Reply with quote

Rotating fields in and of themselves are not dangerous, as electric motors do it all the time. It is rotating fields
inside of electrostatic potential fields that can become dangerous. This does not mean that it will always occur, just
that there is a great risk of this occuring if things are just right. If it does, there is no advance warning. Without
controls in place, it will quickly escalate into a runaway condition that will culminate in an energy avalanche. It is
this energy avalanche that will trigger a local lightning strike.

Control electronics driving some additional windings are required to mitigat e this danger By detecting this beginning
runaway, and applying magnetic bias fields, it can bring the runaway under co ntrol before it is too late.

The toroidal transformer, as designed for hydroxy applications, does not have these additional windings, so there is a
chance of extreme danger if it is run in rotational field mode. This does not

occur in pulsed mode, but the power density
of pulsed mode is only about 1/3rd that of rotational mode. Still, 1/3rd of the power is WAY more than enough to generate
huge amounts of hydroxy gas on demand!

From experience, the "more is better" mentality of most of the waterfuel crowd really concerns me. I repeatedly read accounts
of experimenters doing the most stupid and dangerous things, with no regard whatsoever for the safety of themselves, their loved
ones, and everyone else around them. It is because of this that I will not release details of higher energy modes on the waterfuel
sites. It's not that I want to be secretive at all, as I have already let the cat out of the bag about this technology to those
that carry a healthy respect for this sort of alternative energy research. I just refuse to be responsible for some waterfuel
seeker vaporizing his / her home or neighborhood.

Bob

Posted: Sun Aug 26, 2007 4:27 pm Post subject: Reply with quote

Quote:

Bob:

You have missed it. NOTHING needs to be re-worked. Have another look at the circuit diagram. C22 (1n), R18 (12k) and P5(10k) produce
a time constant of 12 to 22µs, which equals one period (360º) of F1. Similarly, C24 (1n), R22 (10k) and P6 (10k) produce
10 to 20µs. (The 4538's PWout=RC)

Even the sync pulses DO NOT introduce timing errors since:
(quote from my circuit description)
"It should be noted here that the oscillator timing capacitors C17 & C21 do not begin to recharge as long as their sync pins are high.
In other words, these oscillators do not start before the sync pulses are terminated."
(Actually, I only needed to alter the description where the 360° was accidentally omitted.)
Here is the correct one:
The phase is delayed by around 180°/360° which can then be fine tuned to the required amount.

It is VERY easy to adjust EXACT IN PHASE or ANY degree of phase shift you like!

Should there be a need to alter these time constants, it is as easy as to ch
ange just ONE component value.

Hey there Les

I have not spent the time to study your circuit itself, have been too busy de
signing a new and better variant of my HexController that
has even faster output switching times. I was basing my feedback upon your
description of the operation, where you stated that the timing
was based on a 180 degree point due to not being able to get within 3 degrees
(I think) of the zero phase point. If that was not correct
then I must have misunderstood your description of operation. Either way, you a
re correct, it's simple to rectify if it did turn out to be
an issue. If it were me however, I would limit phase adjustability to prevent
the possibility of getting anywhere near the 120 degree phase
points as a safety precaution.

Please don't get discouraged. Someone needs to help these guys out because I
have my plate full with the energy research now. I don't really
have the time to devote to the waterfuel crowd anymore.

Bob

I really have not wanted to say anything negative, but one issue I can see rig
ht away is with the pulse timing. In order to
run in the highest energy portion of pulsed mode, all 3 phases should fire to
gether, with the 1/2 F and 1/4 F being adjustable
by a few degrees of phase at most. It'll need some rework for that. That was
about as far as I made it with looking over the
design. It does look like Les put a lot of thought and effort into it.

Since this circuit does not have bias coil outputs (neither does the PWM3 ser
ies) for controlling power application cores, large
degrees of phase differential are not desired, as that can be dangerous with
out proper controls in place. Random phase in pulsed
mode is just as good as semi-synchronous operation, as the toroidal transfor
mer will have tendencies to lock-step in phase all on
its own in one of a few possible interference patterns.

Bob

Posted: Wed Aug 22, 2007 12:30 pm Post subject: Reply with quote
eldarion wrote:
Bob,

Would any powdered iron toroid be able to function with this technology, or was there a specific reason you chose the 52 mix?

Also, if you don't mind me asking, what is so special about a toroid that al lows the interaction between the dominant energy
and our TEM devices? Is it just the self-shielding magnetic properties of the t oroid, or is it something else? I noticed that
you are minimizing flux leakage through the extremely precise windings...

I am not all that familiar with cores and transformer design; just trying to gai n a better understanding of this critical piece!
Very Happy

Thank you,

Eldarion

Actually it was RichSAS that discovered that T650-52 core. Prior to that
I was wasting money on buying wound cores from surplus
vendors and testing them with a sweep generator. I tried sticking to HF cor es that were out of switched mode power supplies, as
they seemed to be the best, but when dealing with surplus vendors it is some times hard to find out what is what until you buy
one of each and test it. I found very few cores that were suitable, out of all that I tried. Many of the powdered iron cores
worked well, many did not. Laminated cores and ferrites cores are not suitabl e at all for HF use.

As you may or may not know, some loads work fine off of longitudinal flow (cold electricity), but many do not. Conversion of
longitudinal energy to TEM is a must for some loads, while water will soak up longitudinal energy if it is pulsed at the right
frequency.

The toroidal design allows the highest power density in the smallest space while radiating the least amount of harmful EMF
radiation. What good is making power if the radiation from the power supply

causes illness or death.

Very accurate windings are very critical to efficiency. I figure if I'm going to spend the time and money to wind my cores, I might as well spend the extra time and effort to do it to the best of my ability .

Bob

Posted: Thu Aug 23, 2007 3:53 am Post subject: Reply with quote

Only a very small percentage of the energy is TEM, but with conversion techniques that can be increased. As I have mentioned before, not all toroids are created equal, and some are able to tap this energy better than others. In order to get peak results, you may have to experiment with frequencies, number of turns and wire gauges, when you vary what is used as core and winding materials.

The scoped waveforms won't mean that much if you are not driving that toroid in just the right way, and not applying the HV bias to your secondary. From your pictures it did not look like you were using the right kind of wire. You may find that magnet wire does not work as good for these things. I'm not absolutely sure why it makes that much of a difference. I suspect it may have something to do with the speed that the potential wavefront travels through the surfaces of the primary windings, as in the faster the potential propagation, the faster the particle accelleration action of that potential wavefront. The silver plated wire has less resistance than copper alone. You may have to wind that bifilar to increase inter / intra winding capacitance when using magnet wire.

Bob

Posted: Wed Aug 22, 2007 1:39 pm Post subject: Reply with quote

eldarion wrote:

Bob,

One other question: is the output of the toroid pure LMD, or TEM?

If it is LMD, is there any way to convert it (efficiently!) to TEM?

Thank you,

Eldarion

I had a huge response typed and the forum ate it. Will recap briefly.

The output is a combination of both, but the load determines exactly how muc
h can be harvested from the longitudinal side. Water absorbs longitudinal en
ergy only if it is properly modulated at the right frequency. Light bulbs an
d some motors can run off of longitudinal (cold electricity) current directl
y, albeit at reduced efficiency. Many modern appliances and electronics woul
d need to have the longitudinal energy converted to transverse energy in ord
er to be able to use it.

I am working on an energy converter that uses germanium semiconductors, an
obsolete solid state technology. It happens to be just about the only typ
e of common semiconductor material that can convert radiant energy to tran
sverse energy. Take the old free-power crystal diode radio for example. Tr
y doing that well with silicon semiconductors! Is it any wonder that high
powered germanium devices were phased out of production. Now the only plac
e to find them is as NOS (new old stock). Much of this is from old radio a
nd tv shop inventories that are being sold off. I picked up some really ni
ce russian military surplus semiconductors from an eBay seller in Moscow.
It took a couple of weeks for those to get here. I also have a big batch,
dozens, of TO-3 package PNP power devices to use for this experiment.

You may want to read up on the life of Dr Henry Moray. His patent applicatio
n was denied because his "cold cathode ionic tube" had no heater filament, s
o the patent examiner concluded that it was impossible for it to function. Y
et Bell Labs was able to patent his work (the transistor), years after sever
al of the researchers there visited Dr Moray, witnessed his device in operat
ion, and was allowed to examine the device internally. One of them took a ha
mmer and smashed the "tubes" his only working prototype, and Dr Moray was un
able to afford to rebuild it. If I remember right, he said it cost him about
$500 each in those years dollars to build each and every "tube", and they h
ad a very very low success rate at that time. He experimented with different
doping techniques to get "tubes" that exhibited differing characteristics f
or the various stages of his device. Some were used as oscillators, some wer
e used as amplifiers, and some were used as rectifiers.

Bob

Posted: Mon Aug 20, 2007 11:28 pm Post subject:
The simplest way to put it is with the winding in one direction, the spin dire ction of each turn of the winding
(not rotation) within the core favors the spin of electrons, and the other way favors the spin of protons. Since
in nature there are more free electrons than free protons (holes), we can ta p more energy by having the correct
orientation of spin in reference to the direction of rotation. Applying a curre nt to get a static magnetic field
will not show any of the effects caused by particle spin, as these spin affe cts are not very pronounced in TEM
energy. However static magnetic fields are useful as bias fields in certain c onfigurations.

Bob

Posted: Thu Aug 16, 2007 9:59 pm Post subject:
All electrolysis. Cells have their own natural fields that normally direct ion flow in the most efficient manner.
When you introduce magnetic steel, you screw up those natural fields and io n flow is disrupted.

Flaws that affect efficiency at DC are magnified even more when resonance is involved. This is simply because every percent
of efficiency loss at DC is up to 10 percent efficiency loss at resonance.

Bob

Posted: Tue Aug 14, 2007 8:31 am Post subject: Reply with quote

grizli wrote:
WOULD such toroid CORE without conected to the WFC, itself be an overunt iy device when its three primaries are pulsed desctribed above ?

The answer to that is, it depends. If your load is capable of absorbing longit udinal currents, such as water or to a somewhat lesser
degree a light bulb, then the answer is yes. If the input energy is of a corre ct configuration, modulated longitudinal energy flows out
of the transformer leads when that input energy modulates the localized long itudinal energy field. But our instruments are incapable
of measuring it, unless it is converted to transverse energy first. When woun

d and driven for peak efficiency, this unit behaves as a
Tesla magnifying transmitter, and a Tesla radiant energy receiver, all in a common package. There is an energy gain in the process,
which is why Tesla called it a magnifying transmitter. This gain is from a s maller energy source (from us) modulating a larger energy
source (the dominant energy of the universe, longitudinal energy), and us c apturing and using this modulated energy to do useful work.

The electronics, and the toroid itself, for the hydroxy gas production version , have been designed to elicit this response in a
relatively safe manner. This is why I insist that experimenters stick with a p ulsed field mode of operation. It is much lower in
gain than the rotational vector mode. As such, it is safer, and much less lik ely to go into a runaway condition in which output
energy increases longitudinal energy gain to the point that the system overl oads and goes into avalanche. By using water as the
load, any increase in output is absorbed by the water in the cells, so it is a s elf-stabilizing process. Even if an avalanche
occurs in a hydroxy gas system, the low power density of the pulsed mode is such that the water can totally absorb the power pulse
and just disassociate. This means that in order to be safe, input energy must exercise full control over the tendency to
self-feedback, and a load MUST always be present when the device is running . Water is preferred, because it does not burn out,
it just disassociates. We tune the primary frequency to that which works well with water. It is a frequency that allows the water
to absorb the longitudinal component best. This is why just pulsing DC does not give the same effect, DC does not contain the
longitudinal energy that the water is responding to in a resonance drive syst em. Unfortunately, the best frequency for longitudinal
energy absorbtion by water is affected by many factors, so we must strive to keep the system in tune for the best absorbtion of that
energy. The other 2 frequencies enhance this energy collection process witho ut greatly increasing the associated risks.

I know that this entire power technology sounds hocus pocus to those educate d in traditional (transverse) energy behavior. But
I assure you that longitudinal energy is very real, and can be utilized to o ur advantage. Many many inventions and devices have
been shown that can tap into this unseen and unmeasured energy. Some work b etter than others. But those are discussions for other
portions of this forum.

I hope this helps to explain why this toroidal power system works so well wit h the hydroxy gas cell stacks. I hope it also explains
why I do not care to discuss the energy related aspects of this technology on a site where most folk would not understand it. Rotational
vector aspects of this this energy are very intense, and are way more danger ous than pulsed operation. This is why the toroidal information
I provide does not include information on other windings that MUST be added in order to safely experiment with rotational vectoring.
The average water for fuel experimenter has no clue how dangerous this ene rgy side of the technology can be, hence the amount of work I
expended trying to make a relatively safe pulsed version that the average exp erimenter can use safely. If not, they would likely kill
themselves trying to apply a very dangerous technology to a very simple app lication, all in the name of trying to generate more hydroxy
gas on demand. I am not the only one to do this. Meyer, Puharich, and others, have manaed to tap into this energy in a relatively safe
and controllable fashion.

Please try to think of it as a utility power line with no current flow limitatio n. If you get too much coupling, all of that potential
energy can flow in an instant. The result is very similar to lightning, and in f act can initiate an actual lightning strike. Take it
from someone that has personally experienced and felt the wrath of such a ligh ting strike, in 1995. I am still suffering the afteraffects
of that lightning strike injury.

Bob

Posted: Mon Aug 13, 2007 10:46 pm Post subject: Reply with quote

Hello Gary.

You are correct, if you drive any single winding on that toroid with an AC waveform,
you will not see anything but single phase AC output on all the other windi ngs. Where
this phase factor comes into play is, instead of driving with AC, you drive e ach of
the 120 degree coils in phase with very sharp and narrow unipolar negative DC pulses.
The energies that are in phase will be additive. Now apply a nominal 160 VDC positive

bias (through a high value resistor or LPF) at one end of the single winding that is
wound 360 degrees. At the other end of that winding, use a DC blocking ca p, and apply
that signal to a load (120V light bulb works well). Now as you are applying pulses and
bias, start to shift phase very so slightly of phase B and phase C and observe the effects.
You will not need to adjust but a fraction of a degree. If you do not see the e ffects, then
your pulses may not be of sharp enough rise/fall times, or there may be to o much of an impedance
mismatch between the drive and the transformer. Oh, all applied potentials a re in reference to
earth ground. You may want to compare the results with and without the 1 60 VDC bias, reversing
bias and applied drive potentials, ect.. and note the observed differences.

The other mode is rotational with 120 degrees of phase differential between A to B and B to C,
then vary B and C a fraction from that. But I highly suggest you avoid that u ntil you have a
control loop set up that can allow you to shut it down very quickly. It can go out of control
suddenly and avalanche if conditions happen to be just right.

Bob

For power MOSFET protection, look up the MUR410RL. It is an ultra fast 4 A,
100V, axial diode. It is available from Digi-Key as part number MUR41 0RLGOSCT-ND.
You need something really really fast.

Your pulse width may also be way too high if you keep popping the MOSFE Ts. Target
pulse width is in the nanoseconds, and rise/fall times of very short nanoseco nd
times in the pulses are VERY critical. This is why my PWM3E/F boards use signal
processor chips to clean up the outputs of the timer chips, and drive the po wer

MOSFETs hard enough to switch cleanly. Rich uses the TC4420 driver chip s in his
units.

Primary windings are not to be wound together in trifilar fashion.
As explained before, secondary winding is a full fill alone, then each prima ry is wound on
top of secondary seperately, spaced around the core 120 degrees from one an other on centers.
Think of an equalaterial triangle with the primary coils centered at the points of the triangle.
There should not be so many windings that they overlap with each other, let alone overlap themselves
around the core. The only windings that go over each other are the primaries that are wound individually,
each on top of a small portion of the secondary. On an extremely small core l ike that, you will not have a lot
of turns, nor a lot of power. And that is assuming that the core you chose h as a low enough permeability not to
saturate from the DC bias applied.

How many secondary turns are there, and what is the final conditioned opera ting voltage and current draw
when 2 volts DC per cell is applied to the cell stack?

Finally, are you connecting the secondary HF output directly to the cell sta ck, or are you applying DC
as well as the secondary output? No DC to the cell stack and it won't work.

Bob

Some may not like what I say, but that does not change the facts that
we all have to consider. Maybe technology will continue to improve,
maybe laws will change. Maybe not.

When considering the alternatives, an EV hybrid is one beginning.
Remember the list of engines I gave a few days ago? Those were
engines that lended themselves better to direct hydroxy gas
conversion than many others. This does not mean the conversion would
be simple, or easy. Just easier than many others to get a decent
efficiency.

However, keep this in mind... Throttle response has always been a major hurdle to practical application of hydroxy gas on demand.

In my old marine racing system, one which used raw battery power (hundreds of amps) faster than it could be replaced, one could just dump raw power at the problem. But brute force and resonance drive do not mix well in a single system. In my earlier systems I tried to do this, and the heat production from brute force introduced reaction instability in the resonance reaction. They just do not play well together. So a system needs to be designed for one or the other, not both. The hydroxy gas combustion energies are different for each as well, with resonance reaction produced gas having at least twice, and up to four times, the combustion energy of that produced by brute force.

In a modern system, where we want to close the loop, efficiency and fuel conservation are paramount. Technology has come a long ways. R&D has provided major improvements, as we have gone from a 30 second production ramp-up with the old style drive electronics, to a 5 second production ramp-up for the latest electronics. But who is willing to even wait 5 seconds for their engine to rev up to full power, when they are ready to go NOW? On the highways, this may not be an issue, but in stop and go city traffic, this could be downright dangerous. This was always the most annoying hurdle to overcome, and one factor that drove me to look at gensets. This was also the reason I have always said that the EV hybrid approach better fits this technology, as the batteries can make up for the instant demand changes of stop and go traffic, while the genset hums along at a steady pace charging the batteries.

To try this with gasoline for city driving, then hydroxy gas for highway use, would require a dual fuel setup, with each having seperate valve and ignition timing, and other requirements, to be at or near optimal efficiency. It is one thing to just run an engine, it is quite another to run it with efficiency.

I know, the old argument is, if water is free, why worry about fuel economy. I get so tired of hearing this, because so many people just do not seem to get the obvious. If one does not get at least a certain minimum amount of efficiency at each stage of the process, then one CAN NOT CLOSE THE LOOP. This means one can not generate enough power to keep the system going, let alone provide extra power

for doing useful work. There is a slim enough margin already, considering that so much is lost in the combustion efficiency (or lack thereof) of modern automotive engines.

Don't shoot the messenger, as I am not the one that designed the common automobile to be such an energy hog.

Sounds like now you're beginning to understand, and I fully understand you r skepticism. I was very skeptical as well before I did enough research an d experimenting to get a mental image on how this works.

More watts out than in. I disagree that it is perpetual motion though. It is only more power output than "I" put in due to the tapping of another source o f energy. Many disagree about what that source of energy is, so I call it dom inant energy.

I have observed and experimented with these energy anomolies for a long time now, as I stumbled onto it when doing replications of Tesla radiant energy collection methods. At first the gains were tiny, and attributed to the elec tret effect. It wasn't until I started messing around with adding inductors in the spark gap circuits that I really started getting really good results. I don't even use an antenna anymore, as it is not even required. The atmosp heric potential used to drive the early units has been replaced with pulses from pulse generators running on regulated power supplies and driving MOSFETs.

It is very finicky though, as if you wind a winding in the wrong direction, or even connect a winding backwards, it will not behave in the anomolous man ner. If you drive it wrong, like using a 50% duty cycle, you have just anoth er transformer. Everything has to be just right.

Have you ever looked into how Tesla was sending/receiving power wirelessl y? It sure wasn't done via regular radio waves Wink

There are a few devices that touch on these energy anomolies. If you would like to try test out a few devices for yourself, look up the information an d build true replications to test for yourself. One simple one is a "G-Stra in Energy Absorber". A more complex one is a Hendershot device, sometimes c alled a "Hendershot Coil" or "Hendershot Generator". There are many others, but I had good results with both of those, as long as they were built true to design. In the case of the Hendershot device, this means making your ow n hand wound coils and capacitors.

Bob

Bob Boyce wrote:
An inductor is absolutely essential for a resonance reaction. The type of ind uctor used has a big bearing on how efficient it can be. The toroidal is the best, and if wound properly can even yield an energy gain in output.

Bob

Energy Gain??

Output Power = Input Power, Less Efficiency of circuit.
What Gain?

Voltages out May Increase because of Resonance, But Current decreases pro portionally.

With a normal inductor or transformer, you are absolutely correct. So if the replicators don't follow the toroidal transformer design to the letter, the y will end up with normal or below normal performance.

The transformer design I use is not normal. In fact, the design deviates fro m traditional toroidal transformer design in several ways. You'll never see this configuration in any toroidal transformer design program or book Wink

This transformer uses a mix of DC and pulsed DC, and core saturation is un wanted.

If wound and connected correctly, there are energy impulse anomolies that ca n be tuned for when driven with very fast transition, short duration impulse s in particular patterns.

I don't usually delve much into discussing other alternative energy technolog ies that seem to also tap into these energy anomolies. I leave it up to other s to do their own research into those.

Gary, I don't know what you found to read online, but it must not have been information about accurate replications.

There were many that have tried replication of the g-strain energy absorber

using the wrong components, and every one I have seen totally left out the p
oorly documented 3 phase transformer. This alone can guarantee failure. Mine
was built by getting the information direct from the inventor. I still have
the original g-strain energy absorber I built back then.

The Hendershot device cannot be under unity, as it is not a powered device.
No batteries, nor power supply, are ever connected. All generated power is t
otally environmentally provided. Either it is built right and tuned right to
power the load, or it does not work at all. I have a video of one of these
powering loads with no connection to any power source whatsoever. Not even a
startup power source like the g-strain energy absorber requires.

I know that goes beyond your definition of perpetual motion. I still do not f
eel that these devices are overunity, just like solar cells are not overunity
. Solar cells do not require me to input power, yet if they are built right t
hey output power during certain conditions, like when the sun is shining. Jus
t because we cannot see where energy is coming from does not mean that it doe
s not exist.

Why would I want to enclose an energy device in a Faraday cage? This really
makes no sense if we are wanting to tap into external energy fields. Althoug
h I really don't think that these energy fields are blocked by a Faraday cag
e. I may have to test that sometime. Not that it really matters one way or t
he other. All I care about is that it works, and others have replicated and
proved it to work.

My early replication of the g-strain energy absorber suffered from reliabili
ty issues. When the output was fed back to power the input (in order to "clo
se the loop" as they say), it suffered from extreme instability. The output
would avalanche, and quickly destroy the electronics. Through experimentatio
n, it was discovered that these avalanches, if allowed to continue to a very
high level, could even initiate lightning strikes, without a cloud in the s
ky. Try to figure that one out! I have a 10" diameter 36" long 4 guage solid
wire coil wound on a PVC pipe coil form that was used for the primary tank
inductor in these high powered experiments.

Using the internet search engines is not a very good replacement for hands-o
n construction and testing of these solid state energy devices.

Bob

Yea, I don't know who started that myth that conditioning is soaking plates,

but it is a very widespread myth. Everyone seems to think they can just soak the plates and they are ready to go. There are a series of steps involved, an d just soaking plates is not one of them.

All of this information had been posted at one time or another in this and o ther forums, but here it is again compiled into one document.

Hope this helps
Bob

****

Series Cell Stack Plate Preparation and Conditioning

At no time are the plates to be handled with bare hands. Use clean rubber glo ves to handle the plates.

1. Plate Preparation

First, you must deeply crosshatch the plates in an X pattern. Sandblasting o r using an orbital sander will NOT work the same. This sanding is typically done by hand or on a belt sander using 60 or 80 grit sandpaper.

Rinse the plates clean of particulate matter. Acids or other cleansing chemi cals are never to be used on the plates. The only chemicals that should EVER touch these plates are sodium hydroxide and/or potassium hydroxide. Clean t ap water (not city water though due to all the chlorine and other chemicals added) may be used to rinse, but distilled water only is to used for final r inse.

2. Cell Assembly

Assemble the plates into the series cell container. Mix up a dilute solution (5% to 10% by weight) of sodium hydroxide in distilled water. Pour this solutio n into the series cell container until the solution is just covering the plate s totally.

3. Plate Cleansing

During this stage, we are operating in submerged plate condition, where the l iquid level is maintained just over the plates. Applied voltage should be at least 2 volts per cell, but not over 2.5 volts per cell. Run this cell stack

at full power for several hours at a time, which can be 4 amps or more. As th e cell stack runs, the boiling action will loosen particulate from the pores and surfaces of the metal. Be sure to do this in a well vented area. Shut dow n and pour this solution into a container. Rinse the cells well with distille d water. Filter the dilute solution through paper towels or coffee filters to remove particulate. Pour the dilute solution back in and repeat this cleansi ng process. You may have to rinse and repeat many times until the cells stop putting out particulate matter into the solution. Optionally, you can use new solution each time you cleanse, but be forwarned, you can go through a lot o f solution just in this cleansing stage. When cleansing is finished (typicall y 3 days of cleansing), do a final rinse with clean distilled water.

4. Plate Conditioning

Using the same concentration of solution as in cleansing, now fill the cell st ack with dilute solution up to within 1/2" of the top of the plates. Do not ov erfill the cells. Apply about 2 volts per cell and allow the unit to run. The cells may overflow, but this is ok for now. As water is consumed, the levels w ill drop. Once the cells stabilize with the liquid level at the plate tops or just below, monitor current draw. If current draw is fairly stable, continue w ith this conditioning phase straight for 2 to 3 days, adding distilled water t o just replace what is consumed. If the solution turns color or skims over wit h crud, the cell stack needs more cleansing stages. Do not allow the cells to overfill and overflow at this point. Ater 2 to 3 days of run time, pour out th e diluted solution and rinse well with distilled water.

5. Cell Operation

Mix up a nearly full strength solution of sodium hydroxide OR potassium h ydroxide.

Mode of operation determines operational voltage and fill level. For straight DC catalytic operation, about 2 volts per cell or less is required, and fill l evel will be to within 1" of the plate tops. For resonance operation, about 1. 5 volts per cell is required, and fill level is only about 50% to make room fo r the highly reactive gas production volume.

6. Troubleshooting

a. Abnormally low current is caused by improper plate preparation or severe contamination. Disassemble the unit and start over again from plate prepar ation.

b. Abnormally high current is caused by high leakages between cells. This wil l require re-building or re-sealing of the cell container.

c. If current starts higher then drops off, this means that the plates are con taminated. Disassemble the unit and start over again from plate preparation.

I had to revise the schematic for the driver section of the PWM, and I have more work to do on it before I will post Revision D.

The waveform generator section works ok, but through testing I have found th at it exceeds the frequency capabilities of the existing driver section.

The purpose of the heavy HEXFET is to provide lots of starting current to ge t things going. Once warmed up, as resonance is reached, current draw drops by a very large factor, as gas output increases. You can use a lower current device as long as you limit starting current.

The first frequency is at or near 10.7 Khz (what I call the 10-11 khz region) , second frequency is at or near 21.4 Khz (what I call the 20-22 Khz region), and third frequency is at or near 42.8 Khz, (what I call the 40-44 khz regio n).

Actual frequencies will vary due to variations in parameters, but they will a lways be harmonically related to one another. The tuning is done such that th e harmonics are not exactly in phase with one another, but very very close. T his provides a sphase shift in the applied energy. Changing to different type s of water will affect frequency and it will have to be retuned. This is just one of the reasons I recommend distilled water, the other is the contaminati on factor. Do not use deionized water, it will not work properly until it has had ionization restored.

This phase shift can also be accomplished with a single frequency, through th e use of a pair of inductors, as in the Stanley Meyers circuit. That approach tends to work better at high applied potential better than it does at low vo

ltage DC.

An alternative is to use a harmonically rich source at a lower frequency an d amplify the desired harmonic ranges. Not as easy to maintain resonance wi th that setup though.

I have been working on a uC version, been searching for a decent uC to use that has enough built in ADCs and individually frequency controllable PCA s to support the required level of parameter tracking and the number of ou tput channels. One device I found and tested has enough of both, but the P CAs are not individually controllable for frequency.

If this is going to be able to be built by others without extensive electr onics background, the PC board layout must use socketable ICs and componen ts. I doubt too many people can handle SMDs, and most decent uCs I have fo und are not available in a DIP or PLCC type package.

The FET output drives a transformer, which does a pretty good job of conv erting those square wave pulses into some semblance of a sine wave output . Maximum frequency response necessary is about 100 Khz, so 40 Mhz is ove rkill. When I have the time, I need to find an optocoupler with a better frequency response. The H11D1 starts cutting way back in response at freq uencies not much over 10 Khz.

If you would like more information on my methodology, I suggest you look u p and read the patent information by Puharich. While his approach is not e xactly the same as mine, much of his technique is similar.

The chip I have been testing with is an Atmel AT89C51RB2 8051 derivitive. That chip does not have an ADC, but I have an 11 channel 10 bit ADC connec ted serially. I did find that it takes too long to go out and poll the ADC when it's external, so I am looking at a different chip, one with 6 ADC c hannels and 6 PWM units.

The people replicating this would not have to know code. I would provide a s erial port on the board, and I could provide the code so all they have to do is upload it with a terminal program and a PC.

Now on to waveforms applied to drive the HEXFET. FETs do not work well in a nalog configurations. Source to Drain on resistance is very low to allow th ese devices to survive high current flow for the junction size. When you do

not drive them into full conductance, they respond with junction overheat and failure. So you either have to use bipolar transistors, or use FETs as a switch, turning on and off very rapidly to simulate a waveform, ie averag ing the output with capacitance.

The MCUs I have seen in FPGA packages are certainly overkill for this proje ct Wink I would consider soldering a socket for one of those beyond the abi lity of most experimenters, not to mention PC real estate taken. The low co st PC board prototyping service offered by Express PC has a specified PC bo ard size of 2.5" X 3.75" only. Anything larger or smaller than that size go es up in price considerably.

I am trying to keep this project within certain financial limitations. I am trying to keep PC board size consistant, parts cost low, and programming c omplexity to a minimum, which is why I was looking at microcontroller, micr ocomputer, and one chip computer families of processors.

Hey there Dave

You prolly sent it to my old email address, or it was nailed by the spam fi lter on my new one. I had to shut down the old one due to spam because it w as published way too many times on the web.

The changes to the PWM3B and PWM3C boards are pretty straightforward. The components listed as remove are totally eliminated, with nothing put in their place. The components listed as replace are substituted with the ne w value components listed.

One thing I have done in revision E is replace the IRFS3810 HEXFETs with a set of IRF540 devices. They are TO-220 mount, less expensive, easier to s ource, and easier to mount. They are pin compatible (except for pin spacin g), so they can be substituted for the IRFS3810 HEXFETs on the older board s as well. Just re-form the leads to insert into the wider spacing.

The revision E boards have seperate outputs for each of the 3 channels. Wi th a bit more work, the older PWM3 revision boards could be modified to tr iple outputs as well. However, that may be beyond the ability of many expe rimenters.

Probably because PWM3 revision D was never published. I was working on the HexController so much that I never got around to publishing it. After I f inished the first version of the HexController, I took another look at PWM

3D and determined that it was still lacking a well designed output stage.
I replaced the revision D output stage with a 3 channel version of the Hex Controller output stage. Makes it more reliable and less likely to get dam aged by inductive loads. There are now 2 jumper provisions for sharing com mon ground bus and common power bus, which is probably what most expiremen ters will be doing.

As I mentioned to you on IM, the original PWM3 output stage from revisions A through D was acting a little flaky for me as well. Oh, while I am on t he subject... You may have to do some timing component value tweaking on t he PWM3 channel 1 timer. I found that depending on manufacturer of the tim er chip, some may not achieve output to 45 Khz without just shutting down. One chip was so bad that it totally quit when I tried to go above 36 Khz.

Hello Dave

I have broken your post down so I may address each question or set of quest ions seperately below.

WaterFireHO wrote:
Bob

The issues that I ran across is I don't have Your board to jump. And when I put the layout / Schematic into my Circuit Designer program so I can get a print of the PCB to make a board with, I can't seem to do the modification s described, the center pin of Q4 goes nowhere it just ties Opto pin 4 to J P3 and Opto pin 6 has No conection,

Not having your specific circuit designer here to try, I wouldn't be able to duplicate this problem. Not that I would want to spend the time to enter all that in from scratch into another program Wink

WaterFireHO wrote:
So looking at your Schematic,after appropriate parts changes, would it be ; JP3 to Opto pin 6 (Power + in for Driver Circuit), Opto pin 5 to Q2 pin 3 R ail, Opto pin 4 to Q4 p3 / Q1 p2 junction.
Then JP1 - power in for Load and JP2 - pulsed power out to Load with exter nal + power to load. ?

The following applies to modifications of revision A, B and C boards, and do es not apply to revision E. I keep forgetting that the online layout and pho tos do not show everything clearly like the .pcb files that I work from show .

Opto pin 6 is connected to JP3, which is gate power input for the FET. This used to be routed to Q4 pin 2 on revisions A & B, and also to J5 pin 2 on re vision C.

Opto pin 5 is now connected to FET source ground, which is pin 2 of Q2, Q3 , & Q5, if you have all three FETs installed.

Opto pin 4 is now connected to the FET gate resistors (R4, R5, & R40) of an y installed FETs.

JP1 is FET source ground, essentially connected to battery ground.

JP2 is FET drain output, which is the pulsed output that drives the - side of the load (or transformer), while the other side of the load (or transformer) connects to battery + though a fuse, or some other form of overcurrent prote ction.

WaterFireHO wrote:
Do you have the PCB files for this Board, if so could you Email them to me I like your nice clean Layout.

WaterfireHo AT Yahoo DOT com

I sure do, but would need to know which revision files you want. I have .pcb a nd .sch files for all versions from revision A through revision D. I do not fe el that I am ready to release the files for revision E until I am fully comfor table with the layout.

All of these files are for the freeware PCB design program from ExpressPC B (www.expresspcb.com) only, so you would need to download and install th eir program in order to use these files.

Maybe Chris can set up a folder where members can download the .pcb and .s ch files of the revisions they want.

WaterFireHO wrote:

One more thing can a 556 be set up to be an adjustable Carrier frequency cont
roller, as in set it up with adjustable Freq/pw but use it as a carrier frequ
ency for the other 3 frequencies?, similar to a radio, it carries the music a
t the stations transmit frequency. If so where would you Inject the Frequenci
es to be Carried ? Control Voltage 3?, 11?, ???

Thanks
Dave

Sure, you can use a 556 as a carrier source, up to the frequency limit of th
e device of course. As I mentioned in my last post to adam666, not all 556 c
hips are created equal. Some will go higher in frequency than others. Do you
rself a favor and check around to find the info you desire on that.

I myself have not used a 100 Khz carrier like Puharich describes in his pate
nt. My method was similar in that I applied the 3 frequencies to a common ca
rrier, but that was where the similarities ended.

I used a transformer to induce the waveforms onto the applied energy feedin
g the cells. My waveform generator/driver output was applied to one set of
windings on that transformer.

I'm not wanting to be vague here, but if I spell it out too clearly I'm afrai
d that some unscrupulous person(s) may try to patent the method and do us all
 a disservice. Those with a background in electronics and/or radio should hav
e no trouble figuring it out from what I have disclosed.

Already mentioned the frequency regions a few times but here it is again. Ag
ain, these are center frequencies to begin your search for your exact freque
ncies for your particular device...

10.7 Khz
21.4 Khz
42.8 Khz
---
chemelec wrote:
Hi Bob, I got the schematic, Thanks.

I was just curious to see what your trying to do.

Why the Opto-Isolators? Do you really need isolation between the two suppl

ies?

The isolation is so the unit can be used with higher voltage setups with min imal changes.

chemelec wrote:
Why not use something like a TL594 for the frequency generator?

Good question. When I started with this PWM project, I asked RS to come up with a design with three frequency tunable and pulse width adjustable out puts. He had drawn up a single output board, so it was an offshoot of that . The PWM3 was the result. I made revisions and refinements to deal with s ome design issues, but in the end had to really redo much of the board. Wo uld probably have been simpler to go another route from the beginning. All the while I knew that I would eventually be needing a microprocessor base d solution to handle tuning changes on the fly via feedback. I guess I jus t wanted to get something built quicker for some immediate testing while I mulled over the choices of processor.

chemelec wrote:
Off this subject:
There was a Scientific Show on TV last night.
It said that cars can only get a maximum of 20% of the actual energy from th e gasoline they use.
The Balance of the energy is lost, mostly in heat and friction throught-out th e motor and drive train.

Thats prretty bad.

Take care....Gary

Yes, it is very bad. Thankfully, gasoline type engines running on hydrogen or hydroxy can deliver a higher efficiency than they can on gasoline. I still f eel that a hybrid design is the best way to go, both in efficiency, and perfo rmance. A small engine coupled to a generator, operating at it's highest effi ciency point.

Good to hear Adam

For a manually tuned PWM system, the advantage is not too obvious at this j
uncture, but it will become apparent to you as you progress. As you gain ex
perience in tuning, you will probably notice some odd interactions at vario
us points in the mixed waveforms that greatly affect hydroxy production. Th
ere is a reaction to phase differentials that I want to take advantage of,
which is one reason for the move to microprocessor control in the HexContro
ller unit. This can be manually explored to a limited degree in a modified
PWM3B or PWM3C, a PWM3D, and to a greater degree in a PWM3E. It is not easy
to carry phase differentials through a single output device Wink Please do
not ask about my phase differential research here. It is not something I w
ill discuss openly as there may be patent issues involved.

Also. keep in mind that this board was intended for more than just one purp
ose, and having a single output for all 3 PWMs does limit the options. For
example, it makes one heck of a DC motor speed control. Having 3 channels a
llows all 3 outputs to be used seperately. The common drain bus of the outp
ut FETs is not carried on into revision E for that reason.

Sorry Gary

I looked it over just briefly, but not being familiar with that chip off-hand,
I'm not sure what the benefits are with using it, or how large of a chip it i
s. You seem to be more familiar with it than I am. One thing I did notice is t
he switch for 0-50% and 50-100% duty cycle. If the switches are small enough t
hey wouldn't be an issue, but board size is a factor here. The company I use t
hat makes prototype boards only offers one size in 2 layers at a decent rate (
3 boards for $59 shipped in the US), and that is 2.5" X 3.8". If I had the tim
e I would research that chip to see what the capabilities are. With all that i
s going on right now, I don't have a lot of time to devote to non-microprocess
or solutions. If you feel like taking on the task, I'm sure there are a lot of
ppl on here that would be interested.

The TL594 Integrated Circuit is Specifically a "Pulse Width Modulation Co
ntrol Circuit". The Supply Voltage can be between 7 volts and 40 Volts. I
t is a 16 Pin Dip. Maximum Frequency is 500Khz.
I will drive Mosfes Directly, Also most transistors.

The Switch between the 50 to 100% is almost anything, it could be just a s
mall, On Board DIP Switch.

The Real advantage is Totally Independant Frequency and Pulse Width contr
ol.

$59 for those 3 small boards. Ouch!

I can't do double sided boards but at prices like that, I'll stick to making m y own single sided PCB.
It litterly costs me about 1 cent per square inch to make a PCB.
This includes Material Cost, Etched, Drilled and Everything.

Quote:
Bob Wrote: Please do not ask about my phase differential research here. It i s not something I will discuss openly as there may be patent issues involved .

I don't understand why you would worry about discussing anything, Just becau se of a Patent. Just Discussing a Patent is not against the law.

It Isn't even against the law to Actually Build something that is Patented, fo r Personal use.
Its only against the law "to Build and SELL It".
Sounds like a nice chip, with a generous upper frequency limit. I've not se en double throw DIP switches. Tiny slide switches I have seen though.

With my current lack of bench space, I'm working on a desk that's loaded wi th 4 PCs/servers, and a HDD storage array that weighs like 400 lbs. Until I can get a concrete contractor to even show up to pour a slab, I'll still b e waiting to get my new workshop built. Until then I have to farm out PC bo ard & other fabrication I would normally be doing myself.

It's not existing patent research that I won't discuss. However, one may be a pplied for on this particular portion of the technology. Not my call, there a re others involved in this research with me that may apply for a patent to pr otect the investment. Premature disclosure may preclude that.

Electrolyte is not required for electrolysis, however it can improve performa nce. The resonance effect is not really the same as electrolysis however.

If exposing water to high tension electrostatic fields, then you would want to reduce conductivity as much as possible, to reduce current flow,and increase the electrostatic potential. That is essentially the basis of the Stanley Meye rs device, to introduce an electrostatic field to the water.

In low voltage techniques, the best method seems to be the use of an electroly
te to allow the electric currents to propagate directly throughout the solutio
n. In this type of technique, the goal is to lower resistance of the solution
to limit or prevent resistive heating, while allowing the modulations of the l
ow voltage electric fields in the solution to do their work.

Both techniques essentially do the same thing, but just approach it in a diff
erent manner.

A low voltage process using a catalytic electrolyte also has an electrochemi
cal reaction taking place where the water is broken down in a catalytic reac
tion as well. This makes use of the otherwise wasted currents that are used
to introduce the modulations to the solution.

Why waste anything if you don't need to

You will have join the hydroxy group as a member in order to get to the cur
rent revision PWM3E files. These files were updated recently to correct som
e text errors. The prior revision was fully functional, just had some text
reversals on the board markings for inputs/outputs of channels 1 and 3, ie
those marked Ch1 were actually Ch3 and visa versa.

http://groups.yahoo.com/group/hydroxy/join

Once you are a member, you can download the latest PWM3E files from

http://groups.yahoo.com/group/hydroxy/files/Bob%20Boyce/

They'll need the PWM3E.pcb file. You can order it online by running the exp
resspcb software, loading the PWM3E.pcb file, and select the option for onl
ine ordering. They had a 3 board special for $59 shipped last I used them.
Only takes a few days turnaroud as well. I'm short on time, you may ask Kev
in about it, he's placed an order through them.

Total surface area, yea, 4320. That is combined anode and cathode. Effecti
ve surface area is half that minus what is covered by the slot material. A
nd yes, I ran a 170 CID auto engine under no load on that using resonance,
with some limited production capacity to spare. At idle it consumed about
55 watts, averaged. With the wheels spinning at speed so that the speedom
eter read approximately 60 MPH, it consumed about 155 watts, averaged. The
re was no tachometer on that vehicle, so I had no RPM figures documented.

This was calculated from the 13.8 VDC power input, not the output from the power supply, so power supply losses are included. The method of control was on/off power switching, so the power consumed had to be calculated by averaging on time vs off time. Instantanious current was higher, but of li mited duration. In other words, I had to take the high power when running and average over time. The more gas consumed, the longer the duration of o n time vs off time.

60 cells is not a viable solution. Those were prototype units, to collect da ta and determine the optimum number of cells to run with that particular vol tage. Modern inverters are much more efficient, and more cells, 70+ are requ ired to reach peak efficiency.
eco wrote:
Hi Bob,

I have some question :
You wrote 170CID engine and consume 55wats at idle and 155 wats on 60 MPH.
1.Is it totaly elecytolyser consumption (55W - 155W),or consummption of PWM only?

That was total averaged consumption during resonance. In other words the o n time was short compared to the off time. A pressure switch cycled power on and off so I had to average the on time to off time to get my average p ower consumption.

The circuit that I was using in that configuration was not a PWM, it was a modified 300 watt pseudo-sinewave inverter. The output had been modified fo r frequency and was rectified. The output drove the 60 cell unit via a tran sformer.

eco wrote:
2.What is aprox. totaly oxyhydrogen gas production (L/min)when you idle engine?

I had nothing able to measure the output. It was way beyond the capacity o f my flow guage.

eco wrote:
3.What is stoichiometric ratio (oxyhydrogen/air)when engine idling,and

S/R when running 60MPH.

I fed the mixture to an LP carb adapter plate that was mounted under the sto
ck gasoline carb. The LP vapor regulator controlled how much hydroxy gas was
fed to the engine. It took some tweaking to get the mixture right. I do not
know the exact A/F ratio on that setup. I did not have enough time to finis
h my research in that area before it was so rudely interrupted.

eco wrote:
4.How you regulate speed of engine (from idle to 60 MPH)?

Since the car was up on jack stands, I was able to adjust the pressure again
st the gas pedal until I had it right at about 60 MPH. There was no load on
the engine since the vehicle was not moving.

eco wrote:
After all learning from you I can make good electrolyser and will try to co
py your PWM unit.

Thanks for all
eco

HTH
eco wrote:
Bob,
Why you didn't use your PMW3E for testing?

The PWM3 series did not exist back then. That 170 CID engine testing was do
ne over 15 years ago. I had a crude waveform generator/driver setup in my s
hop, but someone decided that I didn't need it anymore, so I had to replace
it. I guess you never read about my research history in depth. You really
should.

eco wrote:
What frequency has your modified inverter?

It was adjustable from 600 to 800 Hz base. The harmonics extended well in

to the tens of Khz. A spectrum analyzer worked well to find a good candid ate inverter. Modern inverters are not made the same, and do not perform in the same way. The PWM3 is pretty much a more modern version of my old waveform generator/driver.

eco wrote:
I am running small honda (5.5HP) with pure hydrogen and engine consump tion is 4L/min - idle.I can't measure consumption when engine running 3500RPM(my flowmeter max. show 5L/min).With oxyhydrogen(2.8L/min) I ca n't run engine .Maybe I need more gas or pressure.How big is oxyhydrog en pressure when you running your car?

The 3 to 5 PSI was more than enough to drive the secondary regulator, only takes ounces of pressure at the vapor regulator, but large fuel delivery ho se, 1" required, at that low pressure. My flow meter max calibrated is 15 L PM and uncalibrated up to 19 LPM.

eco wrote:
I can hold palm of my hand on exhaust,and I don't have any backfire. Engin e running better with hydrogen than gasoline.Doesn't have any vibration.Wh at is your expiriance about that?
eco

Yes, engines run so much better on hydrogen or hydroxy than gasoline. True fuel energy to mechanical energy conversion efficiency can be brought up to 50% and more on an engine designed for gasoline, very easy, unlike gaso line efficiency on the same engine. So you understand, I am not talking ab out % of fuel burned, I am referring to the actual BTU energy content of t he fuel that is converted to mechanical energy.

An engine constructed to take full advantage of the combustion characterist ics of hydrogen or hydroxy could top 75% efficiency.

I have a design for such an engine, a rotary design, but it may be some time be fore I will have the tooling ability to fabricate the parts to build a larger p rototype than the last one I built. The little prototype I built before was a 2 cycle version, so it had no valves, and required 2 cycle oil mixed with the fu el. I want to build a version that does not need that oil in the fuel. It will be an engineering challenge dealing with centrifugal forces that will throw the oil out to gather on the inner surfaces of the spinning rotor.

You design engines, you should see what you can come up with for a good ef
ficient hydrogen fuel engine. See if you can reduce or eliminate reciproca
ting mass.

Read my prior posts referring to the PWM3 series. Specifically the parts wher
e I make hints to the proper methods of driving a cell unit. Connections from
the PWM3E unit to the cell are made with the use of a toroidal transformer.
I don't give detailed step by step instructions for a reason. If I spell out
every step, then how hard would it be for a public domain patenting thief to
take that info and run to the patent office? This will take a little work on
your part to put together in your head in a manner you can understand.

Yes I already know the operational theory of the O2 sensor in normal use,
and I also have operational experience in boosting cars with and without E
CU, so I know how they can vary in behaviour. Unfortunately, what goes for
one make/model setup does not apply to all. Some ECU systems respond well
to boosting, but most not so well. Just takes some tinkering with what yo
u have to get it right.

needanswer

Yes, the combustion time is a little quicker, and more thorough, under boos
t, so EGT should be lower. This will definitely affect the O2 sensor readin
gs as you mention.

18 Amps for 1/4 LPM? WOW! That puppy is gonna really get hot and boil
, LOL

You should be able to make more than that amount of hydroxy gas with jus
t 2 amps at 12 VDC.

It's the other way around. The water vapor from the combusted hydroxy (an
d/or water fog injection) fools the O2 sensor into sensing the mix is too
lean (too much uncombusted oxygen, ie not bound with carbon), which trigge
rs the ECU to richen the A/F ratio. H2O contains dissolved oxygen (and oth
er gases) as well, besides that which is bound with hydrogen, so these can
affect the O2 sensor as well.

For boosters, I inject the hydroxy into the intake prior to the throttle, usua
lly prior to the air filter. I just drill a hole and tap a barb fitting into t

he plastic of the intake ducting in a handy (and usually inconspicuous) locati on. The engine, even at idle, draws in enough air to keep the hydroxy from bui lding up. The amount of hydroxy actually needed to provide a decent boost is q uite low, but anything more will not hurt a thing, so being hydroxy rich at id le does not hurt a thing.

Just remember, the O2 sensor on most engines will not lean the A/F ratio to compensate for the boost, and some will actually richen the A/F ratio. This will also happen with water fog injection as well. If you live outside the U S then it may be legal in your country to add a compensation circuit between your O2 sensor signal output and the computer. If you live inside the US th en I cannot legally advise you to do this. That is my disclaimer and I'm sti cking with it Wink

mos68x, I really wish I was able to go over this project with you. I have rea d your plans and the spacers are flexible PVC as that used for some door gask ets and strip curtains. I really think you should stear away from the sealed cell and use the other design with the open space above the plates. The seale d cell is more of a benchtop testing prototype, and it is much more difficult to monitor and maintain proper fluid levels. Unless you can come up with a s imple solution of course. There are ways but the slotted inserts with plate d esign is just a lot easier to deal with. If you're worried about strength or heat problems, use ABS sheet, and/or make the case really thick.

You may want to look into natural gas conversion systems for vehicles. An L P system is similar, but you do not need the vaporizer part of the vaporize r/regulator combo unit.

Also, be aware that the LP and natural gas systems have changed since the days I ran them on the boat engines. You will have to source an adjustable intermediate regulator capable of dropping the nominal 5 PSI down to abou t 0.5 PSI now in order to use the equiptment now on the market.

Garretson was bought out by IMPCO, and I was told by an IMPCO dealer that t hey no longer carry an adjustable regulator. One other option is to use an IMPCO model J vaporizer/regulator, or similar, and supply it with 10 PSI or more of hydroxy. This is too close to the upper limit for practical resona nce operation, so it would not be my first choice however.

Hope this helps

You can order a substitute by the specs if you like. It's an ultra fast diode

to protect the output devices and power input from transients and spikes, th
at's all. Since the output devices are usually internally protected, the circ
uit will work fine without them. There are MOVs on the board as well for prot
ection, the ultra fast diodes were just to catch the leading edge of spikes b
efore the MOVs had time to react. I prefer to use solid engineering practices
and added maximum protection onboard.

Correct, stranded wire is not optimal.

You really need to go back and do some reading. You have asked things tha
t have already been covered before.

I already gave you the core type. MicroMetals T650-52 is a 6.50" type 52 mat
erial core. They carry cores in many sizes of that material type.

No, I do not use Litz wire for this, nor do I know anyone else that has used
Litz wire for this. As you are probably aware, Litz wire is made up of many f
ine strands of insulated wire, woven to lessen the impact of skin effect. We
actually WANT a nice clean skin effect in this design, hence the purpose of t
he silver. On top of this, even the use of stranded wire creates small twisti
ng distortions in the magnetic field that cause a loss of overall power conve
rsion efficiency. No, regular magnet wire does not work as well. Yes, I have
compared. I get my mil-spec wire from military surplus vendors for a fraction
of the new cost. Solid silver wire, and silver plated solid copper wire both
work just fine. Like I said in the last post, use Litz wire if you want to t
ry it, it's your money.

I don't run cars on water, never have. I run engines on hydroxy gas that is o
btained from water. There is a big difference, and the alphabet agencies/oil
companies just love to go after those that claim or brag that they are runnin
g cars on water.

So many questions, so little time.

I do not use standard laminated iron cores. I use powdered iron cores. Becaus
e this is used as a mixed DC/HF core, we cannot risk saturation of the core b
y the ever-present DC current during operation. As a result, not all powdered
iron or ferrite cores are well suited to this task.

If you want to try Litz wire, be my guest. The teflon insulation of the sil
ver plated mil-spec wire spaces the secondary windings optimally, and has e
xcellent thermal and dielectric properties. If the system was an HF only sy

stem, then maybe. But remember, this is a hybrid DC/HF system, so the wire must have good performance specs, at DC, and at HF. Magnetic performance, a s well as the shape of the field produced by the wire, is critically import ant. Just keep in mind that as you change things, you may or may not get th e same results.

I cannot answer your question about how big of an engine can be run by how much hydroxy gas. Nobody can answer this with an absolute and be 100% cor rect. If you had read my multiple responses to these sort of questions in the past, you would know that fuel requirement depends upon way more than engine displacement. Displacement is but one factor. Fuel energy, engine e fficiency, and engine load, are just some of the other primary factors inv olved. If you know the H2 volume required, know that it typically takes 2. 5 to 5 times the volume of H2 to run an engine as it takes in pure hydroxy gas. Pure meaning not loaded down with water vapor.

Typically, it takes a few days at 4 to 5 amps of current to cleanse a 6" X 6 " plate cell stack really well. Conditioning can be done with 2 amps or less . If you are thinking that the secondary drives the cell stack alone with AC , then I guess you do not yet have a full grasp on how the system operates. The drive to the toroidal transformer is very fast and very clean DC pulses of ultra-short duration. The cell stack requires a mix of DC and HF EMF. As you may already be aware, I do not spell out the connection details in publi c forums.

Measurements are DC volts and quescient (idle) current.

Parallel electrodes will not be of a balanced enough impedance to present a p roper load. It's hard enough for most folk to get series cells balanced well enough to work right.

For a 6" X 6" plate cell stack running in resonance mode, the absolute max imum to expect is 1 LPM per cell when running at optimum liquid level.

The size of the toroid core depends on the expected power of the system it will be running. A small 9 cell stack can get by with a smaller 4" core. A 90 to 100 cell stack requires something the size of a 6.5" micrometals T650 -52 core. A 200 cell stack requires a core of 8" or larger for long term op eration. The 5" surplus cores I used to use were run right at their maximum continuous limit at 70 cells, and were tested short term on larger cell st acks. However, 70 cells was not a very good match for a most common source of power, 120 VAC rectified. Just keep in mind that whatever cell count you

go for, you WILL have to supply the proper voltage DC power sources to bot h cleanse/condition the cell stack at about 2 VDC per cell, and to run the cell stack at near 1.5 VDC per cell. This means 9 cells (10 plates) at 13.8 VDC, and between 90 - 100 cells at rectified/filtered 120 VAC, which will require even higher voltage to cleanse/condition. I use a 2.66 KVA 0-280V v ariable autotransformer to dial in the voltage to exactly what I want. Ther e are smaller 0 - 140+ VAC "variac" units available that could be used.

You're gonna have to build, cleanse, and condition your cell stack before y ou will be able to determine the number of turns on your primaries. The sec ondary is wound first anyways. Now might be a good time to order your core and the silver plated teflon insulated mil-spec wire to wind it with. Secon dary wire guage is typically 16 guage, but may vary depending on your cell stack.

In my definition, this reference to dipole means a dipole charge, not a dipole antenna. A dipole charge is a potential differential between two points, such as the two plates of a capacitor, or between an insulated conductor and earth ground. I'm sorry if it confused you.

Good question on the frequencies. The primary frequency of interest is at or near 42,800 Hz (42.8 Khz), for interaction with the water, as you are probably aware. The purpose of the other two frequencies are related to the generation of interference patterns, and have little to do with the water itself. Here is where a departure from traditional thought, and outside the box thinking is required.

When we create interference patterns within an inductor, we are not only creating an electromagnetic pattern, we are also interacting with natural dominant energy fields. With the right interference patterns, we can create imbalances in these natural dominant energy fields. These imbalances "push back" hard, and cause the creation of very strong impulses in the electromagnetic energy coming out of the inductor. This creates strong spikes of energy that are much stronger than that normally experienced by ringing inductors.

As you may be aware, some military hardware (the guidance system in the minuteman missile) had to be recalled because an onboard DC-DC converter power supply that had a tendency to go into unexpected mild overunity, which caused systemwide problems. This was obviously related to the shape (toroid) and construction accuracy of the inductor, as the replacements were NOT toroidal. Mil-Spec had

required high tolerance. That added up to highly accurately wound toroid cores wound with high quality silver plated teflon insulated wire. Sound familiar? The shape of the core tightly focuses the electromagnetic energy so little is lost to external EMF radiation.

Interference patterns can be created with a single frequency, shifted in phase and mixed. This can happen accidentally, as in the DC-DC converter, or it can be designed in. But the amount of interference pattern obtainable is extremely limited, so energy gain is limited as well. By mixing a pair of frequencies that are harmonically related, we can yield a much more complex interference pattern. The more complex the interference pattern, the more points of interaction with the natural dominant energy occurs, and the more strong energy spikes we can get vs the amount of input energy. Carry this even further by mixing three frequencies. I have also tried using 4 frequencies, but no further energy gain was observed than with 3 frequencies and 3 primaries.

The frequencies chosen for the energy portion of the system is not important, but if water is the load, it is. So yes, we could go to higher harmonics. However, most of the resultant energy coming out of the core would be of a higher frequency than the water can use, so it would be just wasted as heat, which only contributes to interfering with resonant reaction stability. This is why I use the lower frequencies and end with the highest frequency where I want it to be.

So you see, the energy portion of the system has possibilities for application into other forms of alternative energy production. However, there are instabilities in the energy system that can cause sudden "avalanches" of tapped dominant energy. With water as the load, the water just absorbs these energy "avalanches" and disassociates, which is desirable. So this is a blend of more than one technology to get what we want ;-)

Bob

Yes.

Any electrolyte containing carbon will break down during electrolysis. The carbon containing compound will be consumed, and byproducts will be

generated. The carbon binds with oxygen and becomes carbon monoxide,

which is odorless and highly toxic.

If your electrodes contain nickel, as many grades of stainless steel do, carbon will bind with the nickel and ruin it. This will raise the barrier voltage required, and greatly reduce current and power efficiency of the gas generating process.

It's all about barrier voltage, chemical resistance, and resistance to erosion during electrolysis. Higher barrier voltage requires more DC potential to get a given amount of current to flow, which increases watts per liter expended to get a given amount of gas. So higher barrier voltage results in lower power efficiency.

Titanium does not hold up well, as it is not electrodeposition resistant. It could be used as one of the electrodes, but then using 2 dissimilar metals will cause a galvanic response, which will cause other problems, such as electrode erosion. Barrier voltage is high, so power efficiency is low.

Platinum is great for fuel cells, but not so great for efficient electrolysis. It is a natural catalyst for combining hydrogen and oxygen into water, not the other way around. The result is you have to pump higher voltage to overcome this natural catalytic reaction. To overcome this, apparent barrier voltage is very high, so power efficiency is very low. This is the most commonly used electrode material for electrolysis related scientific experiments. Is it any wonder why results and opinions are so commonly biased against efficient electrolysis?

Nickel is good as an electrode material. It is highly stable with most electrolytes, as long as they contain no carbon. Nickel is only mildly catalytic by itself however. Because of the mild catalytic reaction, apparent barrier voltage is low, so power efficiency is high.

Stainless steel, depending on grade, can actually be the best.

304 gets a mild catalytic boost from the nickel content. Carbon of any kind should be avoided to prevent damage to the catalyst. Because of the mild catalytic reaction, apparent barrier voltage is low, so power efficiency is high.

316L seems to be the best choice, as it contains a blend of nickel and molybdenum in the correct proportions to make for a very good catalyst. Carbon of any kind should be avoided to prevent damage to the catalyst. Because of the stronger catalytic reaction, apparent barrier voltage is even lower, so power efficiency is even higher.

Bob

When I tried to explain this 11.5 volt potential gradient point to Kevin, he said that Stephen Meyer made mention of it. Kevin did not know what the context was, and without listening to the interviews, I would not know the context either. Being on dialup here causes problems for us when we try to listen to streaming audio, or watch streaming video. I will try to explain it in the context of how it applies to my research.

When dealing with the interaction between electric fields, magnetic fields, and the dominant energy fields that are present around us, that interaction occurs in a direct relation to the potential gradient applied. This matter/energy relationship exists from the subatomic level, all the way up to the molecular level, and beyond. When the potential gradient is at about 11.5 volts, the interaction potential PEAK is approximately at unity, so no matter how much you modify or tweak, the best seems to be break-even at this point. Below this 11.5 volts potential gradient, the interation potential greatly falls into under unity. Above this 11.5 volts potential gradient, the interaction potential CAN go above unity given the right conditions. The higher you go above this 11.5 volts, the greater this interaction potential can be.

Potential alone does not mean that a process WILL be over unity, just that if the right conditions are met, apparent over unity can be observed. The process in and of itself is not over unity of course, just that interaction with these natural energy fields can yield a net energy output greater than the amount of energy that we are putting in.

It is just like conventional electrolysis, where the application of environmental heat to an endothermic reaction can make it appear that you are getting over unity gas production. The difference of energy is being made up for by environmental energy. Well the same applies for these other processes, in that through properly applied

potential, we can get more out of a system than we put in.

We are not making something from nothing, we are only converting energy from one form to another, and applying this energy to a load. There are high losses in this energy tapping process, so we are only tapping a fraction of the potential available to us. I am working on improving that as my understanding of these natural energy fields improves. The wheelworks of nature already tap into these energy fields, mostly at the subatomic level.

Bob

Of paramount importance with the toroid is that unlike traditional transformer design, the secondary is wound first, and the windings MUST be evenly spaced where they fan out from the center of the core. This means even though they are tighly packed right up against one another at the center hole, they must not be wound so that they bunch up and gap open around the periphery. Mistakes here will cause field errors that will impact overall efficiency.

For the greater majority of systems it is a tightly wound, single layer, full fill wrap of 16 guage silver plated teflon insulated wire. This is held in place with melted beeswax, and tightly wrapped with a good quality plastic tape to make a good base for the primaries.

The three primaries are equadistant on 120 degree centers, held in place with beeswax, and tightly taped. The primaries are all wound single layer, in the same orientation as the secondary, and with the same care for even winding spacing as the secondary. Tape the entire core well after winding to ensure that the windings will not move.

This is where the generic info ends. The primary specifics must be determined based on operational characteristics of the cells. this means you must build, cleanse, and condition your cells, prior to making operational measurements. From those measurements, calculations can be made to determine what guage, and how many turns of silver plated teflon insulated wire are to be used on each primary winding.

Obviously the Meyer transformer has similarities and differences. When the "chokes" are wound on the same core, they are more than just

chokes. Be sure to pay particular attention to the orientation of the "chokes" windings as compared to their relationship with the other windings. In that regard, my toroid is very similar, because winding orientation is very important to the way the energy fields interact. You cannot apply traditional transformer design principles to a device that is designed to be more than a simple transformer.

Almost more than any other single aspect of the entire system, the toroidal transformer itself is what greatly determines whether or not the hydroxy gas output is going to be overunity and by how much. Next to that is the total applied system bias potential (as there is a minimum of 11.5 VDC, below which there is no gain) and cell stack efficiency. The cell stack is the load impedance, and if it is not built correctly, the rest of the system is impaired.

Bob

>
> bob,
> could you please explain the electrical discharge during flashback, is it a product of the recombination of gasses or triboelectric discharge ?
>

When hydroxy gas is combusted, there is an electrical discharge of excess electrons. The sources could be explained in a small book, but suffice it to say that it occurs.

>
> does this electrical discharge also occur in the combustion chamber?
>

Yes it does.

>
> can it be tamed and benefitted from ?
>

Possibly, if captured, the recovered electrons can be recycled back into the cell stack.

>
> thanks in advance - jonk

Some 2 cycle engines can be really good for hydroxy gas. The flame propagation speed of hydroxy ensures that by the time the intake charge begins to enter the cylinder, the exhausting gases are no longer burning. Unless you have carbon buildup, or a small sharp

point of metal somewhere to make a "hot spot" in the cylinder, the 2 cycle design works darned well. Myself, I prefer the modified 2 cycle engines that use pressurized oil lubrication, vs oil in the intake airstream to lube the bottom end. I really don't like having a crankcase full of hydroxy gas if I don't have to have it ;-)

Check out the 2 cycle Detroit Diesel engine construction. Would love to have a similar design in a small, lightweight, sleeved aluminum 2 cycle engine.

Sandblasting does work good, as long as the sandblasting media used does not cause plate contamination. It sure can be a lot less labor intensive than hand sanding.

Upon close examination of plate surfaces under a microscope, the sandblasted plates are full of little craters with mostly rounded edges, while thorough and deep crosshatch sanding produces a huge number of tiny pyramid-like structures with sharp points. Actual surface area is greater with the sharper defined surface structure.

Comparative testing between sandblasted plates, and crosshatch sanded plates, has shown that proper crosshatch sanding actually works much better than sandblasting.

I used to crosshatch sand by hand a lot. Since investing in a 6" X 48" belt - 9" disc combo sander unit for the new shop, I now use the belt sander part of it with 60 or 80 grit for plate prep. I always wear rubber gloves when handling the plates to avoid plate contamination from handling.

Rinse only with distilled water, or distilled water with dilute sodium hydroxide, then pat dry with clean paper towels prior to inserting the plates into the units for the cleansing and conditioning phases. Despite the George Wiseman book recommendation, NEVER use a cleaner, acid, or degreaser, on the prepared plates, as that will contaminate the plates and require they be neutralized and resurfaced. The only chemical that should ever touch those plates is dilute sodium hydroxide and/or potassium hydroxide.

If you find that during your cleansing or conditioning phases that the current starts out lower than it should be, then tapers down even lower, this is a very good indicator that your plates are

contaminated.

I guess it depends on what you are wanting to build.

If you're trying to build any one of a number of devices out there that are not related to my research, then you'll have to follow the advise of those that know those designs.

If you're trying to do a series cell replication, contrary to the sometimes misguided advice of others, plate prep, cleansing, and conditioning are ABSOLUTELY ESSENTIAL, if you expect to get top performance and efficiency for your given surface area. While unprepared, uncleansed, and unconditioned plates will work, they will work comparatively very poorly. No amount of running the plates will replace proper preperation.

Here is what happens when you run plates without cleansing... Instead of the contaminants getting cleaned out of the cells, they go into solution, then become plated back onto the electrodes in place of a clean good-working catalytic layer. This layer of crud prevents a properly working catalyst from forming, and the rest of the life of that cell will be spent performing very poorly, well below Faraday efficiency. The only cure is to disassemble, resand the plates, and cleanse/condition properly. These procedures have been outlined before, so I should not need to go over them again.

Bob
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kumaran wrote:
Hi guys,

I have updated pages for toroidal core windings and PWM circuit testing in my project area.

Finally, I'm manage to get oscilloscope to view wave patterns for circuit an d secondary output.

Picture 1
Frequency measured at PWM output shows 42.8kHz.

Picture 2
DC pulse at PWM output.

Picture 3
DC pulse at mosfet driver output.

Picture 4
Wave pattern at secondary for 42.8kHz.

Picture 5
Wave pattern at secondary output without mosfet driver.

It looks like AC output at secondary with reducing amplitude. Why?

For electrolysis, we need DC. Shall I use full wave bridge rectifier to conv ert AC to DC at secondary output?

Please comment.

Kumaran

The secondary windings are not real uniform, but since you're using magnet wire, I doubt it'll make as much of a difference in the already lowered HF performance.

I see you imitated Rich in his incorrect primary windings placement. I had asked Rich t remove that picture because it showed the two windings further apart at the gap for the secondary leads. The primary windings sould be ex actly equally spaced from one another, so you will need to move those two p rimary windings closer to the secondary leads exit point. Rich has since co rrected his winding placement.

Bob

_____
We miss our beloved little Gidgie Girl Sad
http://www.gidgiegirl.org
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View user's profile Send private message
Bob Boyce
Regular Poster

Joined: 23 Jan 2005

Posts: 1051
Location: Eastern TN

New postPosted: Mon Jul 16, 2007 6:02 am Post subject: Re: Thanks Bob Reply with quote
kumaran wrote:
Hi Bob,

Thank you very much for your feedback. I'll look for MUR410RL diode. As for mosfet driver, I will use UC3709 dual high speed mosfet driver from Texas Instrument which was ordered previously.

You have no pulse shaping or conditioning prior to the driver. I do not feel that the UC3709 has a high enough power capacity to drive the MOSFETs into full on condition fast enough. You may want to use a TC4420 like Rich is usi ng. Another note, be sure to put some real good and fast 4.7 mfd capacitance right at each MOSFET driver chip power leads so that they can have the inst ant current available to drive the FETs hard enough. It takes a lot of curre nt in a very short time to get those fast pulses. Overall current is not hig h, but the chip has to have it available when it needs it.

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_____
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Please comment.

Refer to my prior posts about windings and driver. The reason the pulse ampl itude are lower is that the driver is not capable of delivering the peak dri ve currents required to get fast and clean turn on of the MOSFETs. I don't k now if you are aware, but a driver has to overcome the high gate capacitance of the MOSFET before the device can switch on. If the current delivered tak es too long to overcome this, the gate turns on more slowly, and there is to o much linearity in the turn on. The same with turn off. If there is not eno ugh loading on the output, gate turn off is delayed and sluggish as well.

The pulse width of the MOSFET on time is very very narrow. We are after a pot ential switching effect here, not the B field as in traditional transformer d esign. Eddy currents will still create B fields, but that is not our primary goal.

You will need to get rid of that 1N4007 across the coil, as it will totally

ruin the operation of the primary. The protection diode must be across sou
rce and drain on the MOSFET only. There should already be one built into th
e device, but I like to add one for safe measure. MOVs are an additional op
tion, but they must be rated high enough so as not to soak up too much of t
he HF energy.

Also, unused inputs and outputs on a TL494 or TL594 should not be left just f
loating, but that is a design issue for another day.

The secondary does not generate the source of operational DC power to the c
ell stack. That is not it's function. DC must be supplied from a DC power s
upply, and fed to the cell stack via a choke large enough to keep the HF EM
F from interfering with the power supply. That is all I can tell you on the
open board here. I have tried to use the email link here to send you conne
ction information, but it apparently does not work.

Bob

Corey

I had not responded because you do seem to have most of the information n
eeded.

One comment however on the HexController. The HexController, as shown in th
e project folder, is not for public distribution.
That is a proprietary device, with possibility of a patent pending. I do have o
ne alpha tester in the works for a "basic"
public version, but it may take some time to get outside code written for it.
At this time, I am under a contractual obligation
that prohibits me from releasing details of the proprietary version, and proh
ibits me from writing and releasing code that
could be construed as competition to that proprietary device. So if you are i
n a hurry to test, you'll have to use a PWM3E/F
or some other waveform source.

A 4" core will drive a booster made of 6" X 6" plates, but would not deliver
enough power for a welder sized unit to reach full output.

Currently, there are 2 completed and running replications of the resonance d
rive system, that I am aware of. There may be others that I
do not know about. One has hit about 5X, and the other 9X to 10X. There are l
iterally hundreds of replicators still in various stages

of parts gathering and/or assembly. You have to remember, not very many peop
le that have the sort of investment in this that it can
require, are willing to talk about it on public sites. It would only take one v
isit by the wrong people to wipe out a substantial
investment of time and money. So most choose to keep to themselves and keep
quiet about it. Experimenters that are quite vocal in this
field do not tend to last very long. Most are threatened right out of doing t
he research once they announce that they have had success.

Source of metal really depends on your location.

Bob

I explained this before, but let's see if I can explain this once
more in a manner that might be understandable.

Say you have 7 cells with 13.8 VDC applied, ie 1.97 VDC per cell.

Now, let's say the barrier potential of the electrodes used allows
electrolysis to take place at 1.47 VDC. So, 1.97 VDC - 1.47 VDC =
0.50 VDC per cell above barrier potential. Each cell has that 0.50
VDC of extra attractive potential to speed along the anions and
cations between their respective electrodes.

Now, drill some holes, and lets see what happens...

The above happens, but... The barrier potential remains the same per
cell, as it is ALSO the same from end to end (through the holes).
Let's figure that attractive potential. The applied potential 13.8
VDC - 1.47 VDC = 12.33 VDC. So now, we have the relatively weak 0.50
VDC attractive potential in each cell, and a much higher attractive
potential of 12.33 VDC from end to end. Where do you think the anions
and cations are going to want to travel?

Maybe now you might understand the magnitude of difference, and why
anions and cations will squeeze through even the smallest of holes to
bypass all of those barrier potentials in series in between. The path
of least resistance is to bypass the plates in between and their
barrier potentials, even though they are closer and have potential.
The actual amount of I*R losses depends on many factors such as hole
size, electrode spacing, electrode configuration, electrolyte
concentration, applied potential, ect.

As bad as this is for a 13.8 VDC booster, just imagine the potential bypass forces involved when a cell stack is made up of many dozens of plates and running on ~ 160 VDC (rectified ~ 120 VAC) or more. This was one of the reasons the welder units from George Wiseman had such poor comparitive efficiency as compared to a similar unit with no holes drilled in the plates.

Bob

How long did you run the cleanse? It normally takes 3 days at 24 hrs a day t o cleanse all the crud out of the metal pores, with draining, flushing and filteri ng stops a few times a day. This means about every 6 to 8 hours of running tim e you have to stop and drain the electrolyte, filter the electrolyte well (or replace),

rinse out the cells very well, refill with the electrolyte, and resume cleansing for another 6 to 8 hours.

Even for just brute force DC boosters this step is very important. You must g et rid of the crud before it gets plated to your electrodes by operating with contam inated electrolyte. If cleansing is not done properly, you may have to tear down, re -prepare the plates, and re-assemble again, then run a proper cleanse cycle prior to co nditioning.

Bob

Contamination and magnetics will both rear their heads. At 26% your epoxy i s likely beginning to break down. 403SS is magnetic, and the magnetic fields of the p lates will interfere with the magnetic fields of the cells (fluid spaces between the plates) in a manner that impedes ion flow. As electrolyte concentration is raised, ion lea kage currents increase in flooded cells, as does electrode erosion from exposed edges in p

roximity.
That will also cloud your electrolyte with minute metal particulate. The upp er edges of
the electrodes in the case of overfilled but otherwise sealed series cells.

Also, when you raise the liquid level over the plates in a manner that can al low leakage
ion currents, you will not always visibly notice the drop in production in th e more central
cells that these leakage ion currents cause, but if you compare total producti on efficiency,
it will be much reduced.

This is because overall IR losses have gone up, so more voltage is required to compensate,
driving efficiency down. This manifests as the voltage between the more cent ral cells dropping
and the outer cells raising. It only takes a few hundredths of a volt to caus e an extreme imbalance
like this. It is so slight that most people totally overlook it and assume all is well, until
they try running such a cell stack in resonance mode. That is when these fl aws will really come
to light, as the load impedance across the cells varies, causing impedance mismatch and resonance failure.

Bob

If current rises and it drops bias voltage, then the pulse widths you are runni ng is way too high.
You want the 42.8 Khz region pulse width to be at about 10% or less, the 21 .4 Khz region pulse width
atabout 5% or less, and the 10.7 Khz region pulse width at 2.5% or less if yo u can. In other words,
take the 10.7 Khz pulse widths as narrow as you can get it to go, and go from there. All pulse on
times should be of the same duration in time as viewed on the scope.

Bob