Zero Beat

October 2022

General Meeting
Wednesday September 14th
At 7:30 pm at the
Hazel Park Library
and on Zoom
With Socializing
At 7:00 pm

Club Officers

President Mike K8WU
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1st. VP Marvin W5DT
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n8qvs@arrl.net
Director Len AD8FK
len1perkins@yahoo.com

President's QRM

We're now into the fall season, and I hope that everyone enjoyed the last few weeks of summer. I participated in the ARRL September VHF Contest, mostly on 2 meter FT8; though I didn't get many contacts, I did get a QSO with a station in the far eastern part of Pennsylvania (grid square FN20). I'm hoping that one confirms via LOTW, because I need that grid for my 144 MHz VUCC award!

I also did some backyard experimentation with my two portable vertical antennas that I use for (among other things) Parks on the Air activations. As a result, I was temporarily QRV on 80 meters, which I normally do not have in the shack. I did have some success on that band with some of the western states that a low-hanging dipole cannot usually reach, so I have some plans for a more permanent low-band vertical for the antenna farm.

It was great to see everyone at our September membership meeting. We got an informative update from Joe WB8ADX regarding our involvement with the Davis Aerospace Technical High School and their upcoming contact with an astronaut aboard the International Space Station, and we also spent the last few minutes sharing our recent Amateur Radio discoveries, achievements, and questions. Going by the feedback that I have received, it seems that a lot of you appreciated that, too.

Our next membership meeting is happening on Wednesday, October 12 at the Hazel Park Memorial Library, and then on Saturday, October 15, we are joining the Boy Scouts Troop 1702 in Troy for the Jamboree on the Air event. Of course, the ISS contact with Davis Aerospace Technical High School happens only days after that, so we've got a busy month!

Lastly, I would like to remind everyone about our Sunday Night Net. It happens every Sunday at 9 PM ET on our two repeaters (146.640 MHz, negative offset, 100 Hz PL and 443.225 MHz, positive offset, 107.2 Hz PL), and we also

support connecting via Echolink (node W8HP-R) and IRLP (node 4520). I am still one of the net control stations, and we also have Bob N8REL, John W8TOY, and "new kid on the block" Len AD8FK in the net control rotation. It's always a fun and informative time, so if it's been a while since you checked in, feel free to stop by and hang out.

I look forward to continuing to serve the club for the remainder of the term, and remember, no matter what part(s) of the hobby interest you, above all else: Have fun with Amateur Radio!

Thanks and 73,

Mike Phipps, K8WU
President, Hazel Park Amateur Radio Club

Conventional vs. Inverter Generators.

Chris Warren September 16, 2022

A necessary spare tire.

Off grid amateurs have a love-hate relationship with gas engine generators. Due to generators requiring constant refueling and ongoing maintenance, they are not a realistic long-term power solution. Most of them are noisy, many are poorly made, and all of them are dirty. Yet, they are effective, affordable, and can produce a lot of power for their size.

Generators are broken down into three basic types: conventional gas, inverter, and diesel. What is the difference between these? Which is "best"? Do you even need a generator if you already have solar or other off grid energy available? Let's sort it out.

Our purpose is not to steer you in any one direction. Instead, we'll go over the different types of generators and offer insight to help make an informed decision.

It's a mad, mad, mad, mad world!

If you've ever done any internet research on generators, you already know there is a lot of information overload floating about. For every person who says generator XYZ is great, there is someone else insisting it's a pile of junk. All claims, at least on the surface, seem plausible. YouTube alone has perhaps tens of thousands of videos representing every possible generator opinion.

When doing your research, be aware of the intentions of the people from whom you seek information. Many YouTubers and bloggers receive free products in exchange for promotion, or are "affiliates". Being an affiliate means that the content creator gets paid a cash commission when anyone buys , products through a sales code or link associated with their website or channel. In other words, they have a "sugar daddy". Content creators have a strong motive not to trash-talk about their benefactor's products!
Even paid shills can be helpful.

This is not to say the advice of compensated reviewers is by default untrustworthy. You certainly can glean a lot of valid information from these folks. They are not necessarily lying, but they are very selective with their truth.
The point is to be very cognizant and read between the lines. Why are they saying what they are saying? What are they *not* saying? By the way, *Off Grid Ham* does not have any sponsors or affiliates, and it's not because I've never had offers. Everything on this website is original, transparent observations free of ulterior motives.

Conventional generators: The ageless standard.

Producing 500-10,000 watts from a small single cylinder engine, conventional generators are easily available at any power tool retailer. They are by far the most popular generator format. These generators operate by rotating a metallic wire loop, called an armature, in a magnetic coil, called a stator. As the loop rotates, current is created.

Each rotation through the north-south poles of the magnetic field produces one complete alternating current cycle. To get 60 cycles per second of AC current, the device would have to turn 60 times per second. That multiplies out 3600 revolutions per minute. Conventional generators must maintain a constant 3600 RPM no matter what the load is, or the frequency will drift off the expected 60 Hz.

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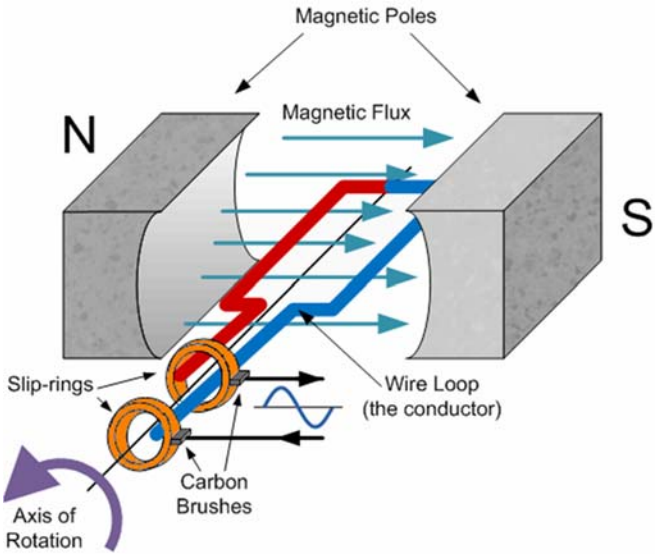


Some generators will turn at 1800 RPM. This is achieved by adding a second coil/loop on the armature. The engine is turning at half the speed as a 3600 RPM model, but creates the same number of electrical cycles with each revolution. The end result is a 60 Hz power output. Most 1800 RPM generators are diesel-fueled. Small 1800 RPM gas generators are exceptionally rare.

Conventional generator lifecycle.

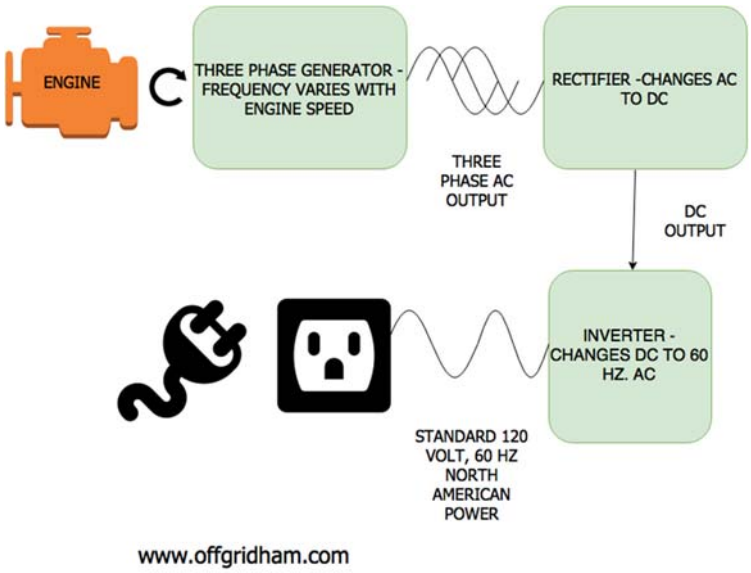
How long one can expect a generator to last is highly speculative and depends on the devices's initial build quality and how it is used. For example, a low-end generator beat to hell daily on a construction site may only last a year or two. If the same generator is treated well and used occasionally for short term power outages, it might last many years. Generator lifecycles are measured in hours of runtime. The less a generator is run the longer its total service life will be.

Higher quality generators can provide decades of reliable service if cared for properly. I have a 30 year old Honda conventional generator that was already 20 years old when I got it. It has probably thousands of hours on it. That old man still starts easily and runs great every time. If I had to replace that generator today it would cost 4-5 times as much as a comparable off brand model.

It's the age-old question: Should you spend more up front and invest for the long term, or spend less now and spread the expense out over more than one purchase? Each individual will have to make a decision based on their needs and budget. Of course, buy the best if you can. For radio amateurs on a small budget who don't expect to roll a lot of hours on their generator, it may be financially sensible to buy a low tier machine with the expectation that it is not a lifetime investment.

Inverter generators.

What if anything can be done to avoid living with an obnoxious "screamer" that slurps a lot of fuel and must always turn at 3600 RPM? For the off grid ham, the go-to solution is an inverter generator. Inverter generators turn an alternator just like their conventional brothers. nstead of connecting a load directly to the alternator output, inverter generators add a few extra steps. The output of the coil/alternator feeds a rectifier, which converts the AC to DC. The DC is then run through an inverter, which creates a 60 Hz AC output from the DC input.



Block diagram of an inverter generator. OFF GRID HAM

ORIGINAL GRAPHIC ©2016

If this sounds like a lot of extra complexity to arrive at the same place, well, it is. It's not for nothing, though. If we dig a little deeper into how inverter generators work, the extra steps make sense.

Inverter generators eliminate the need for the engine to run at 3600 RPM all the time. Instead, it can turn faster or slower according to the load. This makes for quieter, more fuel efficient operation. As the engine changes speed, the frequency of the alternator output will change too, but it does not matter because the rectifier converts it to DC anyway. The inverter will make a nice, clean 60 Hz AC output no matter what the speed of the engine may be.

The extra hardware and circuitry drive up the cost of inverter generators, compared to a similar conventional model. Is it worth it? Again, that's a personal decision. From an off grid radio operator perspective, other than lower initial cost, conventional generators have almost no advantage over inverters.

Inverter generator lifecycle.

Like the others, inverter generators are available with widely varying build qualities and price points. The Honda EU*xxxx*i-series is at the top of the pyramid of inverter generators and has a price tag appropriate to its stellar reputation. Lower-tier off brand inverter generators often look a lot like Hondas and can use Honda parts because many of them are knockoff clones.

In terms of build quality and expected service life, do not assume inverter generators are inherently "better" than conventional generators. While it's true that inverters do not have the same mechanical stresses as conventional models that run at 3600 RPM, all the same caveats and warnings apply.

Basically, there is Honda and there is everything else. If you go with Honda, you have little to worry about. When used & maintained as designed, a Honda will last for decades. If you go with anything else, do your due diligence. There are some great inverter generators out there that are not Hondas. Yamaha makes an outstanding line of inverter generators. The only caution with Yamaha is that in the USA, their service and parts network is not very robust…but then again you'll not likely need it!

Other considerations.

Gas is the most popular fuel, but there is also propane and natural gas. Many generators come from the factory with bi-fuel or tri-fuel capability. If your gas generator does not have this option, aftermarket conversion kits are easy to find, relatively inexpensive, and can be installed as a DIY project. Even if you don't think you'll immediately need it, tri-fuel gives you more options if fuel becomes scarce.

If you have access to a farm tractor with a power take off, consider getting a stand alone generator that will connect to your PTO. These generators are not as portable as you might like, but you have the advantage of not having to buy and maintain a separate engine.

Lastly, we have diesel. Diesel generators are in a class by themselves. Diesel generators small enough for personal off grid use do exist, but they are rare. The other issue is the cost. A diesel will cost many times more than a comparable gas unit and they cannot be adapted for tri-fuel.

2022-09-14 minutes of the HPARC radio club at the Hazel Park library

Meeting called to order at 7:30pm by President, Mike K8WU

Pledge of allegiance

New members introduced

Presentation by Joe WB8ADX on the ARISS contact with the Space Station

Club activity review; upcoming events - Holiday party Dec 2022, Winter field day Jan 2023

Our swap will be Jan 22 2023, many fliers have been handed out at other shows.

Education Update: Bob N8REL - Technician and General classes are delayed until January because of lack of students. The extra class restarts November 1st.

VE testing scheduled for 7 PM on Tuesday, October 4, at the Oak Park Recreation Center.

Siren testing - N8FE is the coordinator of tests for SE Oakland county, n8fe@arrl.net if you would like to help.

Treasurer's report- Bob N8REL- We didn't spend much aside for $43 swap fliers and regular repeater bills. We have $7095.56 in the bank, $85 in PayPal.

Len AD8FK- on the mentoring program. We now have big yellow lanyards to identify the mentors. White lanyards are available at the meeting to any member who has questions or needs help with their station.

Event reminders:

Sunday night net 9pm ET on DART VHF repeater, UHF repeater linked too usually.

Saturday breakfast at Cozy Cabin restaurant

Jamboree on the air. Weekend of Oct 14/5/6. Will help Henry's troop, maybe do a fox hunt. Marv coordinator of it.

M2M - discussions of antennas and other topics

Adjourned 8:51pm

Respectfully submitted,

Reuven Gevaryahu KB3EHW

HPARC Secretary

Chairmen

Repeater	Joe WB8ADX
W8JXU Trustee	Bill N8QVS
Swap	John KD8NYF
Field Day	John AA8UU
Education	Jerry W9NPI
Sunday Net	Bob N8REL
Zero Beat Editor	Rick KB5OO
Public Information Officer (PIO)	Rick KB5OO
Webmaster	Reuven KB3EHW
Banquet	John W8TOY
Club Picnic	Jim W8DPM

Volunteers

LoTW Manager	Murray KE8UM
Club Cook	Bill N8QVS
Lark in the Park	John AA8UU
Net Control Operators	Len AD8FK John W8TOY Mike K8WU Bob N8REL
HPARC Media Dream Team	Hugh KE8BED Rick KB5OO John AA8UU Mike K8WU John W8TOY

HPARC Nets

HPARC Official Sunday Night 2-meter Phone Net

Every Sunday a 9:00 Pm local time on the DART repeater, 146.64 (PL 1 00), catch up on club news and information, and just to keep in touch. All amateurs are welcome to check in.

ARPSC Thursday Night 2-meter phone net

Every Thursday at 8:00 PM on the W8OAK repeater, 146.90 (PL 100). The Hospital radio check net takes place on the last Thursday each month at 7:30 PM on the W8OAK repeater. http:///www.arpsc.com

Around Town

HPARC Buddy Breakfast every Saturday at 9:00 AM (or so)

Cozy Cabin Diner, 2129 E. 12 Mile Rd, Warren, MI Come in early for the socializing. Park in the restaurant parking lot.

Oakland County ARPSC Siren Testing, 1st Saturday at 1:00 PM.

March through November. Contact Marsha, N8FE, at n8fe@arrl.net, to volunteer and be assigned a siren to test.

Amateur Radio Licensing Testing

Jerry has announced that license testing will be on the first Tuesday of every even month at 7:00 PM at the Oak Park Community Center.

Next Session October 4th