2022-09-13 Hamlet Net

Announcements:

- Next scheduled test session is Sunday, September 18th at 9am at 350 Terry Street
    - Patriot VE session, so not fee to take the test, but you must pre-register at hamstudy.org
- To test before this (or online), go to hamstudy.org -> Find a Session (make sure you search for online sessions!

- Our club president, Chuck, KE0ITP, has opened a challenge - if you run Net Control for five nets (either this Tuesday night net, or the general club net on Thursday nights), you will get a free one year of club membership. I suppose that boils down to about $4 an hour, so you're not going to be able to get rich, but you will gain experience operating your radio and running a net!
    - There are about 17 weeks left in the year, so plenty of time to earn your membership! Chuck originally planned to pay for these memberships out of his own pocket, but at the last Board meeting, we decided to have the club fund them, so if you were holding off so as not to cause Chuck financial hardship, you can run the net without worry!

- The Northern Colorado Amateur Radio Club will have its annual picnic on September 17th at the Fossil Creek Lake Pavilion in Fort Collins. They are supplying burgers, hot dogs, chips, and drinks, and welcome you to bring a dish to share. The event will start at noon and run until about 3pm. LARC members have been invited, and I'm sure they'd welcome hams who are not members of either club as well. For more details, see their web page at ncarc.net (november-charlie-alpha-romeo-charlie-dot-net)

- The Boulder Amateur Radio Club has announced that they will be putting on their BARCFest ham fest on Sunday, October 2 at the Boulder County Fairgrounds. For more information, see their web site at www.qsl.net/w0dk/ that's w-w-w-dot-quebec-sierra-lima-dot-net-slash-whiskey-zero-delta-kilo and click on the BARCFest button on the left

- All club activities are open to anyone - members and non-members. ~~If you have questions, ask them on a net or~~ **send email to elmer@w0eno.org**

- Club breakfast Saturday mornings at 8am at the Hidden Cafe in Longmont
    - Come meet other Club members and discuss amateur radio

Misc:

- Lots of state QSO parties this weekend: Texas, Iowa, New Hampshire, New Jersey as well as Wisconsin Parks on the Air

Presenter: Bryan, AF0W

Topic: Powerpoles

Powerpoles

- Powerpoles were mentioned on last week's presentation, and as there were a few questions about them, I thought I'd first go over some details

- A big reason for using Power Poles is for compatibility.

    a. I believe ARES and RACES have both standardized on them so that when various operators show up for an event, their batteries, cables, and radios can all connect to each other.

    b. Many radio manufacturers use different power connectors on their radios

    c. Most radios come with a power cable that has a connector that mates with the radio on one end, has fuses inline, and then terminates in bare wires so the end user can either directly wire it into their power supply, or add whatever connectors they use to them

    d. By using a common connector (both type and gender) for all your equipment, you make your own life easier, and using Powerpoles in the proper configuration helps you share equipment with others without running into connector issues

Build Your Own Power Cables

- You can purchase pre-made cables or construct your own.

    a. If you build your own cables, be sure you adhere to the standard configuration so your connectors will mate properly with others.

    b. Powerpole connectors are meant to be installed using a crimping tool. LARC has a PowerPole crimping tool that is available for members to borrow as well as some Power Pole connectors.

- If you go to the Anderson Power web site and look at their Powerpole page, you'll see that there are actually a number of different types and sizes of Powerpole connectors

- Amateur radio applications use the 1327 series connector housing along with a crimped connector which slides into and is held by the housing

    a. These housings are typically red and black, but they're actually available in other colors such as green, blue, yellow, and 6 others

    b. The housings have slots and tabs that allow them to be attached to each other, which allows you to have multiple cables running into a single connector block - for example, the ARES specification I mentioned earlier has the positive and negative connectors joined together.

    c. There are three contacts that fit this housing - each with a different current / wire size rating

- They are rated at 15, 30, and 45 amps, but the size of the actual contact area is the same for all three - the only difference is the size of the wiring connection and the size of wire they will accept.

- The 15 and 30 amp connectors have a round tube into which the wire is inserted, while the 45 amp contacts have an open channel for the wire.

- The 15 amp are for 20 to 16 gauge wire, the 30 amp are recommended for 14-12 gauge wire, and the 45 amp versions are for 10 gauge wire

- The contacts are meant to be used without solder. You may think that adding solder will help solidify the wire to connector connection, but there are a few problems with this.

    a. First, if the solder extends past the edges of the connector, it can actually prevent the connector from properly seating in the housing

    b. The other issue if that if you are using stranded wire, the solder can tend to wick back up your wire making the wire inflexible and raising the chances of it breaking

- These connectors aren't only for low voltage applications. The housings are rated for up to 45 amps at 600 volts

- Some characteristics of the connectors are:

    a. The actual contact surfaces are flat and wipe against each other when connecting and disconnecting - this helps maintain a clean contact surface.

    b. The connectors are of an interchangeable, genderless design, making assembly more straightforward, and not requiring you to maintain different connector types in inventory

    c. Silver or tin-plated contact surfaces support long life and high power applications

- I actually saw another application of Powerpoles when they were reconfiguring some of the modular furniture at my workplace. The outlets and lighting built into the partitions were actually connected using Powerpoles where the partitions were joined together

- There are also a lot of optional components available for Powerpoles

    a. I mentioned that the individual connector housings can be joined together. You do this by sliding the tabs and grooves together. To prevent them from coming apart, you can either glue the two connectors together, or install a pin into a hole formed between the two connectors. This pin prevents them from sliding apart.

    b. One issue you may encounter is that while the Powerpole connectors snap together when making a connection, they can also be pulled apart without too much force. If you want to keep them together, you can get a retention clip that uses the holes I just mentioned to join the two sets of connectors together. The clip also replaces the pin for keeping the connectors on the same side of the connection together

    c. Panel mount housings are available so that you can install a set of Powerpole connectors on something like a battery box by either drilling a round hole in the box, or by making a rectangular cutout, depending on the type of mount you get

    d. A rubber dust cover can be used to cover the connector ends when not being used

    e. There are also covers for the wire end of the connectors to make it look cleaner, or you can use heat shrink

    f. There are also connectors made for mounting on a circuit board instead of a wire

    g. Finally, there is a tool that makes removing the connectors from the housings easier

- They also have larger versions - I've got a set that I plan to use to connect to my car battery - they will support up to 75 amps with connectors for 8 gauge wire

- I've also seen versions of the Powerpole connector used in uninterruptible power supplies for battery connections

- As with just about everything nowadays, there are cheaper knock-off Powerpoles. The originals are made by Anderson Power, and while you may have good luck with the knock-offs, you may also find that the housings may not mate together soundly, or that the connectors may tarnish and corrode

- To see many of the Powerpole options available, take a look at the powerwerx web site at powerwerx.com (that's papa-oscar-whiskey-echo-romeo-whiskey-echo-romeo-xray-dot-com) - Click on the link for DC Power Products, and then click on the link for Anderson Powerpole Connectors

- They also have a bunch of adapter cables, panel mounts, and Powerpole power distribution devices
- For example, you can get an adapter that plugs into your vehicle's cigarette lighter that has Powerpole on the back for connection to your equipment. Or a cable that has Powerpoles on one end, and large alligator clips on the other for temporary connection to a vehicle battery.
- The distribution blocks allow connecting multiple Powerpole cables together. For example, you could have one connection running to your station power supply, and then have multiple radios and other station equipment with Powerpole connectors connect into the distribution block and all be tied together
- Some distribution systems (such as the Rig Runner series) even have individual fuses for each Powerpole connection and may include voltage monitoring, overvoltage protection, and USB power ports.
- I've also seen a few kits available where you can solder together your own distribution box. One of my first ham radio projects was making a box with a volt amp meter and Powerpole connectors. I wired them all individually point-to-point, and it was a bit of a mess. If I had it to do over again, I think I'd just put the meters in the box and use the RigRunners for the actual power distribution.

ARES standard

- I've mentioned that there is a standard used by ARES and RACES for Powerpole connectors.
- This is needed because the Powerpole connectors can be assembled multiple ways.
- The connectors only mate in one orientation, but the two housings can be assembled either vertically or horizontally, and the red housing can either be on the top or bottom (or right or left) of the pair.
- Since the connectors will all mate with each other, there is nothing preventing you from connecting a red connector to a black connector
- In fact, when my wife and I were taking the training for using the club GoBox, when we tried to connect the inverter, there was a snap and a flash from the inverter, and then it went dead. The person training us replaced the fuse in the inverter, and the same thing happened again.
    a. Upon inspection with a multimeter, he had swapped the positive and negative wires on one end of the power extension cable, causing the inverter fuse to blow.

If he had used black and red zip wire, it would have been trivial to spot, but these cables were wired with white lamp cord, so it was harder to tell which was which.

b. Luckily, once we switched to using another cable, everything worked fine and there was no permanent damage to the inverter.

- When connecting the red and black connectors together, if you are viewing them from the front connector side (and not the back wire side), you want the tongue facing down, the hood facing up, and the RED connector on the LEFT.
- This is a case where a picture is definitely worth 1000 words, so I highly recommend a quick Internet search before putting your cable together.
- If using zip cord, you also want to get your wires and connectors into the proper orientation before you crimp them on, otherwise they'll be difficult to orient properly in the housings.
- Place the wire on the table in front of you with the red / positive wire on the right with the end of the wire facing away from you. Place the contact pins on the wires with the end of the contact facing down. Then after you have crimped the connectors, just slide the wires and connectors into the housings until they click.
- The ARES standard also includes the use of 30 amp connectors, presumably to support current requirements of typical radios
- I'll put a copy of these notes with a couple of URLs on to the club web page so you can see how this all works.
- Will Kraus, KF0FEC, hosted a cable building activity recently at his workplace. We all had a great time, and got to build some Powerpole cables as well.

Links:

- ARES/RACES Powerpole Info: https://www.qsl.net/w2vtm/powerpole.html
- https://www.steelecountyemergency.com/races-ares-anderson-powerpoles/
- PowerWerx: https://powerwerx.com/anderson-power-powerpole-sb-connectors
- Anderson Power: https://www.andersonpower.com/language-masters/en-us/resources/PowerPoleResourcesPage.html

Questions:

- **The question for the week is do you use Powerpole connectors for your radio equipment, and if so, have you made any of your own cabling**
- **In my case, I use Powerpoles for my home station. I've got a couple of RigRunner distribution systems for all my equipment. I added Powerpole connectors to all of the power cables for my equipment, and it's been working great.**
- **I plan to use Powerpoles for my mobile installs as well. My plan is to use the larger 75 amp connectors and 8 gauge cable to run from my battery to inside the vehicle - probably underneath the seats where I will install my radios. In that location, I'll have a Powerpole block from Powerwerx which has a single 75 amp Powerpole connection and 4 pairs of the smaller connectors to which I'll connect the radios. The radio power cables have fuses in them already, so I didn't use a RigRunner type device with integrated fuses.**

Notes:

- If you have ideas for net topics or general meeting topics / presenters, please let us know! Tell us on a net, or send email to k0itp@w0eno.org

Email to elmer@w0eno.org

WB4FAS - Bought used HF rig, and cut them off for ring terminals. Converted everything to Powerpoles a few weeks ago.

KC0CT - Joe - Has connectors on most items in shack and vehicle. Used battery terminal connections with PPs on battery in vehicle. Complicated part is which way to crimp them.

KM6SJA - Steve - Nice concept, but hard to put together. Buys them pre-made.

AF0W - Bryan

KC0CT - batteries are ring on one end, PPs on the other end. PowerWerx wattmeter. - easy to connect in

Soldering stranded wire - more of an issue where stuff moves around, like in a vehicle. The vibrations can make the solder connections "break"

When sliding into housing, there's a bent hook on the front of the connector that goes over a ledge in the connector

Proxy for officer vote

Check on Splatter email reception