



Episode 527 - Ron Demcko - WA2TBQ

00:01

Eric Guth

Qso Today Episode 527 Rondemko WA2TBQ this episode of QSO Today is listener sponsored. Please become a Listener Sponsor monthly or annually by clicking on the Sponsor banner on the Show Notes page or at the top of the QSO today.com webpage. Welcome to the QSO Today Podcast. I'm Eric Guth, amateur callsign 4Z 1UG, where I demonstrate the diversity and relevance of the amateur radio hobby and its impact on society by interviewing ham radio operators, many of whom played vital roles in shaping our technology through the amateur radio hobby. And while many people might say ham radio do people still do that? This podcast demonstrates through in depth interviews just how amazing, diverse and dynamic the amateur radio hobby continues to be. From some of the messages that I received after the last podcast, my absence for about six months was not fully explained.

01:02

Eric Guth

I suffered a bout of cancer last November that caused some severe changes to my body. While the cancer seems to be under control, the side effect was osteoporosis that caused my spine to collapse, making me about a foot shorter than last year. My breathing is quite impaired, so catching my breath is now quite deliberate. I have oxygen concentrators throughout my house to help when necessary. Fortunately, now, occasionally, most of my recovery efforts are to build myself back up to live with my new stature. My days include physical therapy, Nordic walking on poles in addition to working for a living building projects in my shop and QSO Today. To this end, I have lots of ideas for my QSO Today audience but have to implement them more slowly than before.

01:50

Eric Guth

QSO Today interviews are scheduled and ongoing, but my ability to post weekly is not, so my goal is to post a new episode every two to three weeks until I am back on top of my game. So I appreciate all of you who continue to support the QSO Today Podcast with your sponsorships and donations, especially during the time that I was away. If you are new to the QSO Today Podcast, please be sure to look at the qso today.com website where we have over 500 interviews with amateur radio operators. From there you can click on links that will take you to the QSO TODAY Academy. Our catalog contains over 500 videos on every ham radio subject. Completely searchable. My plan for the summer is to start posting all of the QSO TODAY Academy videos on YouTube.

02:44

Eric Guth

Ron Demcko WA2TBQ found his way into electronics and later amateur radio thanks to the early influence of his older brother John KT7JR from a young age, Ron funded his growing passion for kit building and Radio experimentation by buying and reselling surplus electronic gear. A resourceful start that helped pave the way to his formal education. Today, Ron is a recognized expert in the field of radiation resistant passive components essential for military

and space applications on the air. C.W. Remains his favorite mode. We cover all of this and much more in this QSO today.

03:25

Eric Guth

WA2TBQ this is Eric4Z 1UG. Are you there, Ron?

03:30

Ron Demcko

Hi Eric4Z 1UG. WA2TBQ it's great to catch up.

03:35

Eric Guth

Ron, thanks for joining me on the QSO Today podcast. Can we start at the beginning of your ham radio story? When and how did it start for you?

03:43

Ron Demcko

Well, quite a long time ago. I was a young child. I've got a older brother who is KT7JR and you know, before there was Google, I had the luck of having a brother that was very much into radio going into engineering school and helped me out quite a bit. So pretty much at age 10 or so I started getting involved in electronics to one extent or the other. And at about age 13 I got my license. I was WN2TBQ in upstate New York. And at the time he was WB2SHE going to engineering school and helped me out greatly. So I'm super lucky to have an older brother that really guided me throughout all of this.

04:27

Eric Guth

What was the hometown there in upstate New York?

04:30

Ron Demcko

Well, Ridgefield Springs. So it's a little place. Probably the closest larger city would be Utica. And actually in Utica there was a surplus facility. There was an old GE microwave facility there and I managed to spend some time grabbing things at 5 or 10 cents a pound. So it was really awesome. A lot of fun. Right. Myself and a couple other kids from the community, we'd load into one of the guys father's station wagons and come back with all sorts of stuff.

04:59

Eric Guth

You were surplusing on the weekends?

05:01

Ron Demcko

Oh yeah. In fact, that helped me out through college quite a bit. I surplused. We would go to a lot of ham fest. We would go to, you know, the Central New York ham fest. Once I went to the one on Long island and the big one was Dayton. So my brother and I went to Dayton probably about 1970. No, 1981. No, no, 1978. Take it back. Right. So in 78 we made enough money for myself to get a really neat Yaesu FT101E that just kind of progressed into other radios through the time.

05:38

Eric Guth

So your brother is the guy who inspires you into amateur radio and into electronics in general. But you know, you had from age 10 until age 13. What kind of things were you doing electronic wise in those days?

05:50

Ron Demcko

Well, heath kits and surplus. It was really neat. There was, you know, at that surplus site I would be able to grab some cheap things like cheap scopes or some of the emergency flashing light beacons. And I just thought those were the neatest things. So I do a little bit of playing there. But a lot of it was heath kits and I really loved building heath kits. Managed to do everything from some of the small transceivers like an HW7 to depth finders and some of their equipment and pretty much a good spectrum of their kits. I really miss them. It was a great hobby.

06:27

Eric Guth

What was your source of income that you were able to buy all the heath kits and the surplus stuff?

06:33

Ron Demcko

Yeah, well, I was a paper boy, but the surplus business actually was really good. In fact, I, I had a. Interesting situation a couple of times. I would skip school, you knowing my parents would know and all that because I'd have a truck coming in where people would be, you know, coming to pick up equipment. So I had one actually coming in from Ohio and I had to take the, you know, the day off and all that. And the interesting thing was the day beforehand, I guess word got out that I was going to be doing something other than school. So the principal parked across the street and he saw us loading up the truck and this and that.

07:12

Ron Demcko

So then, you know, little kid, I'm walking down to the bank with, I don't know, a fair amount of money and the principal comes in and sees me depositing the money and all that and he mentioned I wasn't at school. And you know, I kind of showed him the deposit slip and said I couldn't afford to miss out on this shipment today. And he walked out, I walked out and get in trouble. So.

07:38

Eric Guth

You actually spent a lot of time getting surplus gear. You brought it home, did you repair it? You had a business running it. Sounds to me talk a little bit about that business that an 11 year old is running. He's not letting school get in the way of his education.

07:53

Ron Demcko

Yeah, that's right. It was true. Well, it was fun too, right. So we'd grab oscilloscopes or keyboards. Usually a keyboard at the time would be broken up. I'd get it for maybe a dollar

and those could be spun for something well in excess of that, probably more like 50 or 75. That was, it's good money.

08:12

Eric Guth

What kind of keyboard are you talking about now?

08:15

Ron Demcko

Well, those are just like Data entry keyboards from companies like Mohawk Data Sciences and Univac. At the time, they were both local. So these would be scrap devices that were being thrown out and then the equipment that was mainly, you know, older vintage, like the 743 Tektronics stuff, the big ones. And as a kid, it was hard to lug those things upstairs, right. They're probably 50 pounds. And eventually I got good at moving them around, right. So in some cases it would be as simple as just, you know, dusting them off and getting the dirt off of them. And you could spend those for three or 400 bucks and you'd buy them for, oh, maybe \$50. So, you know, this was a great source of income.

08:57

Ron Demcko

Helped me out throughout college and like I said, it was something that we kept going until, oh, probably the junior year of college to some extent or the other. But, you know, during high school and such, that was a very big portion of time.

09:14

Eric Guth

You had a surplus business and your brother was your partner.

09:18

Ron Demcko

Yes, right. I couldn't drive, so he very luckily he would. And of course I didn't really know what I was doing. So he'd be telling me, okay, there's a bad tube there, this and that, right? And that. That kind of how it all, you know, it started out there. So, you know, I went from the Heathkits and then started thinking, well, I really want a way to buy more heath kits and the like. And one thing led to the other. Along the way, though, there were some really neat things, right? Because I learned about magnetic core memory, where they'd actually be stringing cores. And you know, a lot of guys never had that going into engineering school. So I was, I think I was really blessed with some practical experience prior to, you know, prior to going to.

09:58

Eric Guth

To college as a young teen, you must have had quite a test bench as well, right? Because you were repairing.

10:05

Ron Demcko

Well, you know, it was pretty easy. We'd have a couple of good scopes that we could rely on. I guess they were old at the time. So I tended to have two, you know, at one point in time and then a couple of great ohm meters and pretty much that was it. Now when I got into trouble,

we'd take it to my friend's house, Lee Marshall. His father was actually a commercial repairman. And then we do some further things up there. I remember the first time he showed me how to cool electronic components with some, you know, some of the canned coolant and oh boy, that was like magic, right?

10:40

Ron Demcko

So there was a lot of experience through just, I guess finding all the different spectrum of problems you might have in a scope or I think I had one network analyzer that was, that was really beyond me at the time.

10:56

Eric Guth

But what choices did you make in high school that led you to where you are now? It sounds to me like the schools gave you a wide latitude to be able to choose what you did with your time and what your interests were.

11:13

Ron Demcko

Yeah, I think it was more the case that if you still could pass the test and not cause problems, you could do pretty much whatever you want. Right. So there was of course some great teachers there. I liked math quite a bit at the time. The science stuff was good. But I really had more interest in electronics so that pretty much was the basis of it. When I got to college, I really didn't know which way to take it. My brother went for power systems that really wasn't me. Anything over 110v I'm probably worried with. And semiconductors were just really getting out of their infancy back in, you know, the early 80s and that I had the luxury of having a professor, Dr. Dominguez, who talked about that semiconductors are only part of the story.

12:06

Ron Demcko

And his thought was that passive components were going to have quite a bit of progress that needed to be made through him. I actually worked on a internship in college which tested components, passive components under very high transient fields. So that further got me interested in actual physical components, passives, primarily capacitors, but in some cases some inductors and resistors. And then throughout college that was one of themes. Right. We were looking at how the actives would need very efficient supporting passive parts. And then I managed to get an internship at a company in the South, Corning Electronics. And then it just kind of blossomed from there. Corning Electronics made only passive components and at the time it was really good, a good fit.

13:08

Eric Guth

Where did you go to college?

13:09

Ron Demcko

Yeah, Clarkson College of Technology. They've since changed the name to Clarkson University. So you could tell I went to there in the early days before it became a university. But it was a four year degree engineering and it was a great place. It really was. It was quite

cold. It was very close to the Canadian border. And the opportunity to go to North Carolina on internship really was appealing at that time I played a lot of golf and in fact in the first few years of working, normally you would think that life would only be work, but I managed to play golf before work, after work and on the weekends. So it was a really good deal. Yeah.

13:54

Eric Guth

What was your first rig as a novice? Did you have a novice rig or did you have something that your brother and you adapted for your novice service?

14:04

Ron Demcko

Well, he set me up really well. We had Heathkit HW101 and that was a wonderful radio. Managed to spend an incredible amount of time on CW and then eventually we upgraded that to an FT101E and still kept on CW. So pretty much from about 73 to 81 I was very active and exclusively CW and they had a blast then, you know, during the latter part of college it was, you know, it was tough, so I didn't spend that much time on the air. But then, you know, after being down in the Carolinas for a while, I managed to get more radioactive, I guess. And now we've got some great, great time logged on the air.

14:51

Eric Guth

I'm looking over your shoulder and I see a Drake TR4.

14:55

Ron Demcko

Yeah.

14:56

Eric Guth

So you've got some vintage gear behind you. What is the rig now? I mean, besides the Drake's? You're restoring that equipment and then you use them on the air?

15:06

Ron Demcko

Yeah, mainly straight key night. So I like to do straight key night, which I'd like to really put in a plug for that. It's a, it's a wonderful event if people could fit it in on New Year's Eve, I guess, or New Year's Day. But yes, I'll use the Drake's or the FT101E for straight key night. Luckily enough I got a pair of the TR and then I've got a TR7, Drake, a couple of FT101Es, HW99 and some of the QRP rigs from Heathkit. My main rigs now are IC7300 and Yaesu, FT DX 1200 and an FT950.

15:46

Eric Guth

I recently sold my IC7300 to a friend of mine and I think it's one of the worst decisions I've ever made. I want it back for the money. It's quite an user experience.

15:58

Ron Demcko

It really is. I mean, I really still love the old rigs and I, I would imagine that I hope to have

them, you know, always around. In fact, WA2RQC Auto has been very kind in helping me find these radios and some of them needed a lot of tlc, some of them, you know, just some light dusting, but I can't imagine Life without that IC7300. I picked one up at Dayton this year and it's just absolutely outstanding for.

16:28

Eric Guth

The price and the value. It seems like I can hardly operate a radio without having a spectral display.

16:34

Ron Demcko

Yeah.

16:34

Eric Guth

You're still a CW operator?

16:37

Ron Demcko

Yes, I am. I'm getting back up to speed now. You know, in the early days, I've managed to get up to maybe 30, 35 words per minute very easily. And now I'm well over 25. But it's 30 isn't as easy as it used to be, I suppose. Maybe it's age or whatever, but I'm building it back up. So we're having fun.

16:56

Eric Guth

Do you have a favorite keyer or key that you like to use?

17:00

Ron Demcko

Well, yeah, you know, I still like the Benchers. I mean, they're just a great old. You know, it's a great, It's a great gear. I was actually given a bug, a Vibroplex bug, and I tried to operate the RSGB. I think they have a bug night. Right. Oh, that was a disaster. I just can't use a bug and my straight key. In fact, I just gave my. My brother, his grandson is. Is looking to get into cw, so I gave him the original straight key or the two straight keys that my brother gave me back in. Boy, maybe about 70. Well, yeah, about. Maybe 1968 or 70. So we're recycling some of the equipment for the two generations on. Right.

17:43

Eric Guth

You have a test bench now, I think he sent me a picture. It was very nicely arranged so it didn't look like you were working on it when you took the picture of the bench. But do you have any unusual test equipment on your bench or what do you think is probably the most valuable piece of test equipment that you have?

17:59

Ron Demcko

Well, I have a TDS784, so that's a great scope and it, you know, it's wonderful. I bought that surplus for three or four hundred dollars. And that's probably the best. The big deal to the, to

all of it and. Right. I'm kind of at the point of being in between houses here and potentially moving from this one to another one. So I, I've got some projects that are kind of abandoned on there on the test bench. The difficulty is the new place. The whole of the test room is actually only about 8 by 8. And right now I'm lucky enough to have a 12 by 22 heated and cooled garage bay with being, you know, separate and walled off and all of that great lighting. So I've really got some stuff to.

18:47

Ron Demcko

To catch up with One of the other pictures I may have Sent is from my friend's shop. He Ben has a 3D milling equipment. He's got 3D printers and even a pick and place. A home pick and place machine where we can go on down to 0402's case size. 0402 case size. And it's. It's quite a bit of fun. So I have to say I managed to get up there a fair amount and have some great fun with him on projects. So it's lucky I don't have the room anymore, especially in the new place for all of the good toys.

19:25

Eric Guth

And now this mid show break. The QSO Today project Now has over 500 podcast episodes and hundreds of hours of virtual Ham radio expo presentations, all freely available and fully supported by you, the listener. This short message and the later mention of the ham radio workbench podcast are the only breaks in the program. QSO Today has no commercial sponsors, so no one influences the content or direction. This project exists solely to promote amateur radio and the people who make it thrive. Producing QSO Today is like a half time job. Your support at any level covers the tools, hosting and production costs that keep it going. And while it is a labor of love, it isn't free. Only about 6% of listeners contribute. Please consider making a donation.

20:17

Eric Guth

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20:51

Eric Guth

You're wearing a Kyocera AVX shirt.

20:55

Ron Demcko

Yeah.

20:55

Eric Guth

After corning, you spent quite a number of years at AVX, I understand.

21:00

Ron Demcko

Yes.

21:01

Eric Guth

And you spoke a little bit about Dr. Dominguez and his interest that maybe spurred your interest in passive components. Can you talk a little bit about passive components? And it seems to me that you're the expert on radiation hardened passive components. Could you talk a little bit about how critical and crucial that is to some of the industries that the west finds themselves in and your contributions to that.

21:26

Ron Demcko

Okay, well, yeah, I mean we. There is a fair amount of magic almost occurring in the world of flight electronics, mainly the cubesat, the Leosat geos and things like that. So I've been lucky enough to work with Danya, who is K06DZY, Danya works at JPL and through that, you know, I get to view the needs for components through a much younger engineer's eyes. And the world of active devices are really quite broad. I mean, there's quite a few radiation resistant, radiation hardened pieces of active devices that are out there from ei, et cetera, the whole spectrum. And what is being discussed and what's being looked into is how can passive devices, which are, I guess to some extent inherently susceptible to radiation, how could those be used in some of these low earth orbit weather type satellites, et cetera, and not be torn apart?

22:40

Ron Demcko

So that's interesting. I get the chance to work with Aerospace Corp. On a variety of committees and meetings. What you can generally say is things can become much more radiation resistant by using certain grades of dielectrics which are stable. They're stable actually in transient fields as well. So if they get hit with a relatively large incoming voltage, they're stable. And in the presence of radiation, they're also stable. Commonly you would find the components would degrade, turning somewhat into resistors. So now you have a capacitor with an exceptionally high leakage current or a very high or very low resistance. So there's ways around that. And of course, capacitors are really critical to those active devices on the satellite platform, where they might have more interest in doing processing of data on the actual satellite then downlinking things.

23:40

Ron Demcko

The amount of data that you get out of these flight platforms is just amazing. So quite a bit's changed. You can't fly with a, a variety of 0.1 microfarad capacitors at the end of each IC anymore. It's quite a bit different than that. In fact, that kind of leads me into an interesting story about supercapacitors in space. You're just starting to see you have.

24:05

Eric Guth

To define the terms then for people like me that need it broken down a little bit more, it just occurred to me, and frankly, I'd never thought about radiation hardened until I was researching this episode. It sounds to me like if you've got a capacitor, for example, what

you're looking at is whatever the dielectric is made of, or whatever the components are made of in terms of whether they're resistant to radiation.

24:29

Ron Demcko

Yes.

24:30

Eric Guth

It's not like you're building a cage around these components. You're actually choosing the elements that go into it that are not susceptible to being broken down by radiation.

24:41

Ron Demcko

That's exactly it. Right. You're choosing the material systems that have a resistance to radiation, and then there's a way that you could design those material systems in such a way to further minimize the impact of radiation upon them in the semiconductor world. Well, they do some other interesting tricks, but for us it's specifically the material systems and ways to put them together, whether it's with dopants or certain thicker dielectrics which make the parts have less leakage and things along that line. But you know, that's a really good example of how a passive device absolutely impacts and limits the performance of an active device and a whole active system. And of course now that concept is being taken to the world of AI and quantum computing and such. But yeah, radiation resistance. In fact, that's what my college intern work was somewhat concentrating on.

25:44

Ron Demcko

In that particular case, it was transient fields and some other things that were occurring. It's funny how it all ties together, isn't it?

25:52

Eric Guth

Would we want to consider radiation hardened components for amateur radio builds now, given maybe the price differences may be minimal. The danger to our project is buying counterfeit or bad components from a dealer that we think is okay. Do you see some crossover from your commercial experience on the radiation hardened side to applying it to amateur radio projects?

26:16

Ron Demcko

Well, I'm lucky enough. I met some of the satellite team up in Dayton and hopefully we'll be giving them some donations of very high end componentry, whether it be clock oscillators or capacitors, so, or resistors, even that. But I think for the type of work that most of us do in our radio career, I definitely wouldn't go with the cheapest of passive parts and I wouldn't really go with the radiation resistant ones. Although they're great. Radiation parts are super. But the, one of the problems is they typically have a much smaller capacitance value. And although they're exceptionally reliable, they would not have anywhere near the amount of capacitance that you might need in some of our circuits without maybe putting 10 of them in parallel. So luckily I have to admit I get a great deal on components working here.

27:17

Ron Demcko

So much of my project work is done with auto grade parts. And the automobile grade parts are very minimally more expensive than consumer grade parts. And although consumer grade parts meet their specifications, the automobile parts have an incredible consistency from lot to lot and part to part, where I have no concern about how things might change across time. So for instance, my friend that I mentioned earlier was building a, a few displays for in fact older test equipment. The displays was going out and he came up with a, you know, an option for doing something else. In that particular case where you're building multiple units, auto grade parts are really tremendous. In fact, the rule is that we cannot change the materials or even the design without written acceptance from the end customer.

28:17

Ron Demcko

So you'll find those parts are very consistent and if you make 100 or 200 million a day, you get really good at it. And that, believe it or not, is not an excessive volume for companies building passive parts.

28:31

Eric Guth

Now. For example, I think I bought an assortment of 1,000 resistors for, I don't know, \$15. You can't even read the colors on the quarter watt resistors anymore. Although I guess people aren't using a lot of quarter watt resistors. I still use a few. Are you saying that if I went to Digikey or Arrow or someone like that, I would ask for an auto grade part and then I'm getting something that it's not radiation hardened, but it's also within its tolerance because it has to be, right?

29:01

Ron Demcko

Yes, I think that's correct. You could go to any of those catalog distributors or the main distributors and look for AEC Q200, which is the automobile spec, and you'd find that those parts would exceed their data sheet by a very great percentage and that data sheet would be quite detailed. So I, I don't mean to say that the consumer grade parts aren't bad. They, they certainly are good. However, it, let's look at it this way. If we're building maybe a switcher, a switching power supply, right? And if we use a consumer grade part, there is a possibility that the equivalent series resistance or even the resonant frequency of that part could change.

29:49

Ron Demcko

So although the part still meets the specification of capacitance, dissipation factor, tolerance, voltage rating, insulation, resistance rate, the other parameters, which are quite important to a switcher's design, those other parameters could change. So for that reason I don't use consumer grade parts, but they're certainly able to be used in a variety of applications pretty successfully. So I guess I have a little bit of a, an advantage in having a great source of parts, a cheap source of parts. But also I guess I want that consistency.

30:29

Eric Guth

You alluded to a story in a message that you sent to me about getting a car. Was it a Miata?

30:36

Ron Demcko

Yes, it was.

30:38

Eric Guth

Could you tell that story about how you obtained a Miata that got water logged and what you did to get it running?

30:45

Ron Demcko

Sure, sure. Well, I had an mgb. So the start of the story is that I always loved MGBs and still do. I had a 75mg, I got it for \$1250 and like any MGB, I, I needed some parts. So I'm off at the junkyard looking for MGB parts. And it turns out a gentleman that I had golfed with, I had never known that he owned the junkyard. I had always been buying him Cokes and in. Because he'd always beat me at golf right side by Coke and popcorn and all that during our outings. And I, I was saying, hey, I need MG parts. And he said, well, why don't you buy this brand new mg? It's just been flooded and come on to my house. So he had a flatbed come to his house, which was at the back end of the junkyard.

31:32

Ron Demcko

He was thinking of keeping it for himself. And he said, I'll give this thing to you. And I got a great price on it. Had, I had like 31 miles or so on it. And it was a fast rising flood at the dealership. The Miatas were so light, this little thing got picked up by the water and put in a ditch. The water came up to the floorboards inside the car and actually the ecu.

31:58

Eric Guth

The ECU is what, engine control unit, right?

32:01

Ron Demcko

Yeah. So the main computer for the car. Right. And so it wouldn't start. He gave me a great price on it. Basically looking at the ECU just needed to be dried out. However, in drying it out, there was noticeable damage. The electrolytics had popped off of the board and the aluminum electrolytics, they were radials at the time. They had water that got inside the seal and there was electromigration, some other things that had occurred and basically they were short. So, you know, I took the eco out, having a great access to our lab at the company I worked at. I did the ultrasonic cleaning where I could, baked things out where I could, and used some localized heating and cleaning equipment on certain parts of the board.

32:56

Ron Demcko

So I took all of the capacitors off, which are typically the problem with a lot of things, and threw in tantalums because I knew the tantalum parts were more reliable and in the particular configurations they weren't seeing high ripple currents or anything, and put the ECU back and all of a sudden drove the car for many, many years. It was a great, it was a great pleasure and I just love the fact that I, in fact, during the thing, I like the Miata so much. I sold the

MGB and they kind of keep myself for that. But you know, I don't need a 50 year old MGB at this point in life. But yeah, it was great application of kind of like ham radio rebuilding stuff again and having access to good parts and a good lab.

33:42

Eric Guth

Always a nice combination.

33:45

Ron Demcko

Yeah.

33:46

Eric Guth

I had a business for a while where I was fixing head end gear for cable television companies. What I discovered was the first thing to do is just replace all of the electrolytic capacitors and whatever was sent to me, whether it was a modulator or something like that. And then when I was all done I replaced all the caps and everything was working. There wasn't a lot of troubleshooting to be done because usually that stuff runs so hot it was computer data centers that told everybody that everything should be cooled down. But a lot of these cable television head ends were over 100 degrees most of the time. So I discovered that by replacing all of the electrolytic caps at the very beginning I could save the troubleshooting time. And usually the thing worked just fine as soon as I was done.

34:31

Eric Guth

Yes, that was an interesting discovery And I think that you also in your message to me that you also alluded to the fact that caps usually are the problem with older gear and maybe that's maybe a good first step.

34:43

Ron Demcko

Yes, it sure is. I just got a the power supply for HW101 and same thing. Right. The old electrolytics were all basically bad. They dried out. So normally you would think that the electrolyte would be safe with the containment methods. Typically it's just a rubber seal with crimped aluminum. So in fact what I'll do there is here again I'm lucky that I work for a company that builds them. But I will upgrade the wet electrolytic to a polymer electrolytic and those have a much higher reliability. It's not going to have the same dry out considerations, lower esr they run cooler things like that. Right. So that's kind of my go to. Now I don't necessarily go to tantalums because there's.

35:31

Ron Demcko

Well because mainly tantalums are service mount and when I need a replacement for an older electrolytic, maybe one on a video game or you know, my etheric power supply. Well then I'll. I'll use my lead in parts that are. That are polymers in nature.

35:50

Eric Guth

That also leads me to a question. I bought a kit on ebay for recapping my TS520.

35:56

Ron Demcko

Neat.

35:57

Eric Guth

So now you got me thinking that perhaps the guy that is selling the capacitor kits is buying from the guy I would buy him from in China. I guess I should go look through the bag and see whether or not they're actually seconds. And he's just got a great margin on the caps. Do you find that there are say, military space grade techniques that you use at work that you've now applied also to your ham radio builds and stuff?

36:25

Ron Demcko

Absolutely. That's a really interesting question. And that's absolutely true. Maybe the easiest. Well, I do a lot of surface mount work in stuff at home or rebuilds along that lines. But if you look at what the main cause of a failure in a ceramic capacitor is, usually it's not an inherent error that the manufacturer had made. Usually it's an application error. And of those application errors, the vast majority are physically induced. So the biggest physical problem with the capacitor is really board flexure, where the capacitor really, it's a ceramic brick and it's connected by terminals on the end of it to something that could flex. And that flex could put a strain on the termination. It could cause a crack, a micro crack that over time would pick up moisture and it would turn that capacitor into a resistor.

37:28

Ron Demcko

Whether it's, you know, 100k or 10k with time, it's going to happen. Right, so what we've done or what I'll use is if I'm using a standard part, I put two capacitors in series and I orientate the pads opposite to one another, 90 degrees opposite. So if there's flex, and so imagine an L shape, right? Each capacitor would be placed at L along the portions of the L put in series. And you'll find that if it flex in one direction, okay, fine, the cap might become a short, but it's not a dead short to ground because there's another capacitor with it. So that's the easiest surface mount trick. Now there's another way you could go about that.

38:12

Ron Demcko

Incidentally, if you're driving, well, I won't say what car, but if you're driving a car, this is actually a very major problem for everyone on something called Terminal 30, which is power at all times. And they will get around this problem by either putting two standard capacitors at 90 degree orientation to one another, or they may use a single capacitor that has two individual capacitor electrode stacks inside of it. So in fact, although it's a single case size, there are two different capacitors in series. And then the termination, there's a conductive epoxy that's over plated with the termination that fluids solder to. That conductive epoxy takes up the board flexure strain as well as a coefficient of thermal expansion mismatches. And you would eliminate oh probably 999, you know, million, you know, 999.9 thousand out of a million type problems.

39:19

Ron Demcko

So you'd end up with one in a million problem. It's, it's a wonderful way to fix that problem. Another one, another trick which is kind of neat. If you're using a radial capacitor, sometimes the cleaning methods that might be used in that capacitor would still allow impurities on board and those impurities might break down under certain conditions depending upon what they are, into hydrogen that might propagate its way up the lead. If the part was placed vertically on the board like a normal electrolytic would be the way around that is to bend the leads, lay the electrolytic on the, on its side on the board and then the hydrogen would come on up the leads. But it's not going to take a right turn and go into the capacitor and change the partial pressure inside and then blow the thing out, right?

40:14

Ron Demcko

So that's another good trick. Very simple physical type tricks and then there's derating. So in some cases heat is always the problem, right? Heat and electric field strength intensities always the problem within any part. So there's ways that you could choose larger case size parts and higher voltage parts, derate them and you could easily get a 10,000 or 100,000 improvement in the reliability of that part in application.

40:44

Eric Guth

Of using commercial parts with part shortages and counterfeits in the marketplace. If you weren't at avx, how would you advise other hams to source their parts?

40:58

Ron Demcko

Right? This is difficult. I guess my first thought would be to buy from reputable sources. And believe me, in my projects early on and even now, if I can't find a part, I'll go to another source, not knowing where it is and buy Joe's parts and dot com or whatever. Sorry, if there's Joe's parts dot com I don't mean to imply that they're bad, right? But I'll go to some unknown website or you know, and buy something, right? So I think going to a reputable dealer, whether it be, you know, digikey, mouser arrow, something along that lines there, that's going to reduce 99, well over 99.9% of the problem. I think the other one is in fact I work a lot with a group in Los Angeles on this exact problem where obsolescence of components is a huge issue now in any program.

41:55

Ron Demcko

But whether it be AI or something else. Right. Most components or at least Actives aren't going to be around for more than five years. Maybe that's a little bit of a generalization. But so what they're looking at are quick microscopic investigations. So even just taking a big loop and looking at how does that printing on the active device look relative to others? Are there misprints on it? Believe it or not, we've seen Made in USA misspelled quite some times and you know, some real doozies of issues. So that type of investigation, you could tell a lot with a visual look see on things. But yeah, there's some incredible counterfeit and counterfeit problem stories out there where even some companies are building die.

42:52

Ron Demcko

And it'll be about the same design of, you know, a normal active device that's well known and you know, desirable to purchase. But that knockoff part would have different timing

characteristics and such because they're using smaller dyes and different geometries within the active device. So in that particular case, you really couldn't tell a lot by a visual inspection of the part. You're probably going to get burned badly.

43:23

Eric Guth

You mentioned self healing parts. What are self healing parts?

43:27

Ron Demcko

Yes, it's kind of a new thing in the world of capacitors. We talked about them having a possibility, maybe a more than typical possibility of them failing. Right. So if a capacitor fails, it's going to kill the circuit, usually because of its configuration. Self healing parts are actually families of components that when they've been driven into a failure, they may act in that failure state for a microsecond or much less than that. But due to certain characteristics that have been designed into the part, they suddenly heal themselves and they become capacitors again. That's really important now. They change after they self heal, but they don't change appreciably. For instance, typically the capacitance will drop maybe 1 or 2% and then the loss characteristics might change a little bit. They might become 0.5% more lossy.

44:30

Ron Demcko

But usually that's of no significance because typically the devices are quite low loss anyway. So imagine this, right? You have an electric vehicle and for some reason the snubber capacitors have failed. And now you've got maybe 40kW or maybe 60 or 80kW in the battery bank. Right. That's a real problem if you got a dead short. So you'd have a heck of a fire, you'd have an explosion or something along that line where the part gets blown off the board and you know you've got all sorts of problems. Well, these self healing parts actually they'd see that failure. They would, they would change their state and then work as a virtually new device until the next failure state occurs. Well, you can only get away with that maybe a few thousand times.

45:23

Ron Demcko

But imagine having a part that doesn't go dead short that could self heal itself. And that's of huge importance. There's other applications besides electric vehicles. There's things like very high end AI servers or quantum computing. I'm really hot on that. But you might have a \$2 or \$3 million cryostat type of investment and you just can't afford to lose that investment because of a failed single component or even a satellite. Same. deal. Right. You could self heal in those types of configurations or applications. So it's really neat to hear about kind of like this magical thing where things will suddenly get better. Never, never before seen. And it's coming and it's already in use in many applications.

46:17

Eric Guth

Now in an electric vehicle, is there some way of identifying that part failed and healed itself? Is there a way to go into a log and say, you know, it looks like we've got a problem in this area?

46:30

Ron Demcko

Yes, that's actually very true. It is possible. There are certain efforts underway that are probably patentable, but that's a very, it's a very good thing to pursue. And the answer is yes.

46:48

Eric Guth

Good. Okay. If you've got a failure that could be identified across a wide range of vehicles. I know, for example, the Tesla cars are talking back to the hive mind anyway, that they should be able to pull together a bunch of stats that are telling them that they've got a component failure or even a board failure or subsystem failure that seems to be happening that they can identify and correct either in the service or in the manufacturing.

47:16

Ron Demcko

That's right. Buses and trains as well. Safety related circuitry. Absolutely. This is a big deal and it's going to be a net benefit for systems and end users.

47:29

Eric Guth

Back to amateur radio, you said that you're moving from one house to another. Are you moving into an hoa?

47:36

Ron Demcko

Well, I guess there is an HOA there, but there's a great ham radio club at that location, so there's no limitations. I've got a Vertical up, thanks to my brother Katie7JR, who set the vertical up for me on a recent visit. And I'm going to be putting up an NFED zap. So, yeah, we're lucky. With no limitations there.

47:55

Eric Guth

And the HAM Radio Shack that you're building there will be able to accommodate your wide variety of rigs.

48:02

Ron Demcko

Yeah.

48:03

Eric Guth

And you're mostly doing cw. You're not doing any digital modes or anything like that.

48:08

Ron Demcko

You know, I'm going to be getting into that, but I'm afraid I'm slow and I'm going to need some time. So maybe that'll be once I retire, which is probably relatively soon anyway.

48:19

Eric Guth

Yeah, retirement is not what I thought it was going to be. It's certainly different. I've actually

been playing with the QRP Labs QDX and just for people that say, well, what's Eric doing right now? I've discovered FT8 with this and I've discovered FT8 with PSK reporter that I'm quite surprised in terms of seeing whether the antenna that I have on the roof is actually capable of being somewhat omnidirectional and what it can hear. I'm quite surprised just listening to FT8 and then having it report back to PSK Reporter that my antenna hears all over the world. I'm surprised that except for Antarctica, I've gotten over 100 countries I'm listening to, or at least it's saying that I've heard that those countries have come through my receiver.

49:08

Eric Guth

So I'm just pointing out, if you wanted to check how antennas are working, that some of these digital modes just in the passive listening is actually quite interesting. I've also discovered probably 5 watts is not enough power to do FT8, you know, in a large competitive environment. But just when you're playing with the 7300, you might want to play from the standpoint of seeing what you can hear and how omnidirectional your vertical is.

49:33

Ron Demcko

Yeah, I think that's a good idea. Well, first goal is to get ourselves back up to some. Some higher speeds on. On cw and Absolutely, I think that FT is going to be a lot of fun. So we've installed the software and things along that line and it's just unfortunately, you know, time constraint. That's. That's the real.

49:55

Eric Guth

Actually, I hear that when you're buying poor components, that the problem I've discovered with poor components is that it's the time you're losing trying to figure out what the problem is. The time is more expensive than the components. If I just gone with the better.

50:10

Ron Demcko

Components, that's actually where I'm coming from. And in fact, when I do some builds with my friend Ben, even if we have some older parts around the lab here, we tend to just go and frankly hit Digikey up and you know, there's more places to buy the Digikey. But it's, you're right, it's. It's the real problem. There's just no time. Hey, you know, other things, one other thing is that I'm starting to work is that on noise configuration and noise characterization of passives. So it's really interesting that some of the manufacturers will have different metallization systems and different interfaces between those metallization systems and the multiple metals that might be used. And what an impact on parts. So you mentioned FT-8. There's some other things going on in the world. Well, even quantum computing, right, where we have such incredibly small signals.

51:07

Ron Demcko

But that's probably one of the reasons that kind of still not getting on FT8, worrying about that too much at work. It's amazing though how much you could improve with very minor changes in manufacturing methods or modest changes in metallization schemes. So there's going to be one more thing to worry about besides inherent reliability. You know, things like noise or aging things along that line.

51:37

Eric Guth

And now this mid show break. Every two weeks I listen to the Ham Radio workbench podcast with George KJ6VU, Vince Ve6LK, Mark N6MTs, Thomas K4SWL, Michael VA3MW and Rod VA3ON and their guest on often topical and important projects in amateur radio. This discussion amongst the regulars and their guests remind me of the conversations that I used to listen to on 146.94 and 146.46 MHz in Orange County, California while working on my own workbench almost 50 years ago. It is amazing how much practical ham radio knowledge that we can absorb by listening to the Workbench podcast. That starts to make sense when we start our own deep dive into our own projects. So join me by listening to the Ham Radio Workbench Podcast now.

52:32

Eric Guth

And as George and crew push beyond 200 episodes, you can get to the Ham Radio Workbench podcast by clicking on the banner in this week's Show Notes page. And now back to our qso.

52:46

Eric Guth

You mentioned that you have a parallel interest in arcade games like pinball machines. How did that interest get started? I understand that there was a benefit that came out of the early interest in arcade games. Could you talk A little bit about that.

53:02

Ron Demcko

Sure. Yes. Well, yeah, it really started with my wife and I, who at the time was in college with me. We were a couple of years apart. We now up going and playing Black knight pinball. And you know, that was a really inexpensive date back in the 80s where for five bucks you could, you know, get some food and something to drink and you know, play a little bit. So that was fun. We ended up getting married and we bought a pinball game. Actually, I got a great deal on that pinball game. It didn't work. What happened was it took a very large surge. The mov blew out and that mov saved the rest of the board. So I just had some, you know, minor rebuilds there. But that's how the actual pinball started.

53:50

Ron Demcko

Through the years, I've owned some other really great ones, some Bobby or some other Evel Knievel type pinballs. After Covid, the price went crazy on these things. So I think I'm out of buying. Well, never say never, right? But if I can find a deal, I'll get one some more. But the prices went crazy.

54:10

Eric Guth

Why do you think that is? Do you think more people became hobbyists during COVID I do actually.

54:16

Ron Demcko

I work with another gentleman who's much more into it than me. He has, I believe, 30 pinball games and he lives in the D.C. area. But what he found was that, you know, the man cave and the home entertainment just took off. Crazy after Covid. So now, you know, pinball games that were getting for maybe three to five hundred dollars, maybe twelve hundred on the absolute high side. I mean they're five, six thousand bucks now. It's great, but it's limiting for someone trying to get in the hobby. From a video game point of view that started. Video games themselves started after pinball where I picked up a broken machine on the side of the road. It looked absolutely gorgeous to the point where I had to stop at the people's house and ask, is this really garbage?

55:05

Ron Demcko

And they said yes, the display doesn't work and they're tired of fixing it. They said every time somebody came to fix it was 250 bucks. And you know, their kid moved and it's out of here, right. So took it home. And very quickly it was the horizontal output transistor and a capacitor, exactly what you said. The electrolytic dried out, shorted the transistor. And anyway, with maybe about an hour worth of rebuild, that thing is up and running. So I'VE got those and then that, you know, just broadened out into other games, the multi cades and the Galaga's. And the best video game story I ever have is I bought a broken one. I didn't know what I was buying. It was a cocktail version. Frankly, I was buying it for the case more than anything else because those cases are hard to produce individually.

55:55

Ron Demcko

But you could buy an older one and clean it up quite nicely and it works out well with any game.

56:00

Eric Guth

What do you mean by cocktail version?

56:03

Ron Demcko

Okay, there's an upright game and there's the one that you sit down at and this cocktail one was like a cocktail table where you could put two chairs on the end of it. But you know, I bought the thing for I think it was \$40, might have been 30 or 40, maybe either one. It was cheap, right? And you know, I heard some jiggling around inside and I was thinking, oh boy, what's the problem, right? And man, I, I had to drill out the game, you know to. There was no keys, everything was just in horrible shambles. So at any rate, I ended up drilling out, opening up the game and I found that there were notes in the cash box that, you know, don't forget to do this or that. But there's also a few, you know, physical currency notes in there.

56:48

Ron Demcko

And then there was quite a bit of quarters in there and I thought wow, that's great. Kind of looked through the quarters because some looked odd and there was a few silver quarters. So actually I got paid by picking up that video game and it's in the garage getting ready to be rebuilt. The monitor is bad, most likely horizontal output transistor and the capacitor there.

57:11

Eric Guth

How do you find the time or make the time to pursue these projects in addition to your family obligations and your work and golf?

57:23

Ron Demcko

Well, I gave up golf. So I've played maybe a few times in the last year. That's it. But, but you know, bitches, there's a lot going on. So there's. Luckily my wife is an engineer as well, so she accepts a lot of the things that I do as hobbies and kind of gets into them to some extent herself. Right? She, in fact, she was a ham. She let her license last but. And expire but that. You know, it's funny, we both have hobbies and they're kind of diverging, but we managed to fit them in. So it's.

57:58

Eric Guth

Do you schedule the time on a calendar or you just say after dinner I'm taking my coffee into the garage.

58:05

Ron Demcko

Yeah, that's kind of it. Right. It's just if there's some free time on the weekend or whatever, I'll just kind of randomly head on off there and it works out. It works out.

58:17

Eric Guth

Is there a dream radio project that you've always wanted to do that you haven't done?

58:22

Ron Demcko

Well, you know, I always want to rebuild a Collins S-line, so I don't think I'll do that because of the physical size limitations that I have the new shack so. Well, that's probably the biggest rebuild Hope. I've always wanted to do something like MFJ did or Heathkit. Right. And, and kind of rejuvenate Heath Kit. I think it would be possible. I think the problem, I'm biased, right, because I grew up building Heathkits, so I love the thought of Heathkits. I just don't know if there's a business there. But yeah, if there was an absolute dream, I would love to kind of create a Heathkit type of, you know, entity that would have kits for people because that's, it's amazing what a kit could do.

59:11

Ron Demcko

Or as you've seen, just the number of different Elmers I've had in addition to my brother and Danya, there's, I mean, quite a few other guys that have really helped me steer myself into a career all based on a hobby. And it's been a good run. So I just would like to try to do something like that. I just don't know if there's a need for kits, simple leaded kits that people could put together.

59:38

Eric Guth

Do you want the brand HeathKit and the look and feel of the old company or is it just you'd just like to have a kit company?

59:47

Ron Demcko

Yeah, I think a kit company, but you know, the same theme, right, where we would have the hope of attracting young kids or you know, middle age or late age hobbyists and give them a good value and provide a, a device that's needed and you know, in a way who would care about the profit. I wouldn't want to lose on the thing. Right, but the. I, I think there's a net positive that could be gained for anyone that would build those kits and you know, imagine the number of lives you could, you know, perhaps steal or steer into, you know, a STEM type role because hey, STEM is really hot. Not to discount the importance of any other career, but STEM makes a lot of sense and it's really quite lucrative.

01:00:34

Eric Guth

I think it could be QRP Labs, it could be any of the other companies that make say SDR receivers or something like that. I think that a kit company for kids would also have to have some integration with their smartphone. Yeah, I'm thinking off the top of my head. You know, if you had a whisper receiver, for example, you're not a ham yet, but you have a whisper receiver and a way to build it. So then you can plug it into one of the websites where you could actually, you know, what am I listening to? And then maybe that would lead to experimenting with antennas. You know, what's the best antenna? I could connect to this receiver so I could see who's hearing me around the world on my smartphone. Anybody, Any entrepreneurs out there that have an idea.

01:01:20

Eric Guth

But maybe those kits already exist and the problem is the marketing or the where do you find the audience with enough attention span to hear the message and take it through? Or maybe it's a science teacher in a junior high school that has to be the one that introduces it. You have to get the audience in the room first.

01:01:41

Ron Demcko

That's right. That's right. Well, you know, we had talk. In fact, I mentioned this to a guy who was helping me do some remodeling at the potential of the new house that we're moving to. And his comment, it was the same thing. Right? Because I kept thinking, why everybody's got a cell phone, right? Could there be something we could tack onto a cell phone to get a kid interested? And he said, well, I don't know about kids, but I want a nice simple solar charge for my phone and for some other things that he was using. And you know, suddenly started thinking about, well, maybe it's a, a simple power source, something along that lines, I don't know. But that might be, you know, in the future. Just hard to say.

01:02:22

Ron Demcko

But I think that would be an awful lot of fun after working years, get well, who knows, if I come up with an idea, I could do it during working years.

01:02:31

Eric Guth

What is your sense about where the hobby is going in the Next, say next 10 years? Are you positive in terms of what's happening now or what are your thoughts on that?

01:02:41

Ron Demcko

Yeah, I'm pretty optimistic. I think that it's interesting because even people that I work with, some of the middle aged people are finding that they're now interested in radio and that's good. It's interesting why they're saying they have this desire. One is just the possibility of speaking to different people around the world that was. I was amazed to hear that being maybe the number one reason. I was thinking, well, maybe it's going to be their living in the Carolinas. No shortage of hurricanes and wildfires and floods and all that. They actually didn't talk about emergency services. And from a young kid point of view, I think that's starting to come back. And the reason is, well, number one, I think that ARRLS does some great work and getting young people interested again.

01:03:34

Ron Demcko

But also there may be cell phone overload and the fact that a kid might want to go something more simpler and that might be neat. In fact, I was thinking about something as simple as the old MFG model banders and maybe redesigning one of those with a digital display and some power functions, some integrated batteries, things along that lines. Something that could get a youngster kind of interested. Something that's affordable and simple enough to build with some performance.

01:04:10

Eric Guth

I happen to be a great optimist in terms of what's happening in amateur radio because I think that the Internet has just made it possible for us ability to share information or just to find anything at this point now. So I'm thinking I can find this information, I can go and see if this is going to work or I can try it and I can share it. Because of the Internet is like instant gratification or at least I can find just about anything. I think that's why I'm so hyped up on amateur radio now is because 30 years ago it would take a whole year for this process to present an idea, get feedback and then rewrite the article. Now we can do it overnight.

01:04:50

Eric Guth

And I think because of that we're kind of on this upward slope of information sharing unlike we're doing now. Every day there's something new in amateur radio.

01:05:00

Ron Demcko

That's right. I think that's absolutely true. And you know, the web has made things so accessible, as you say. The next step I think is going to be AI Now I think AI is going to help ham radio in another way because we'll want to get more of that personal one one type of interaction. In fact, many times on straight key night I'll be talking to my buddy Moro in Italy. And it's one of those things that we always catch up and do the yearly catch up or maybe monthly catch ups. It's really wonderful. AI is going to change so much and I think you're going to have just an acceleration of the hobby because of that. It's quite funny to think of a whole trend like that helping ham radio out. But I believe it's going to be.

01:05:47

Eric Guth

There just to be able to do what we do so well and that is to transmit a signal into a piece of wire and talk around the world without a trillion dollars worth of infrastructure holding it all up.

01:05:57

Ron Demcko

Yeah, that's right. Hey, and in a way the random aspect of it usually every ham that I've always met has just been so interesting, wonderful to talk to. It's just I believe going to increase in popularity.

01:06:12

Eric Guth

Do you have advice that you'd give to newer returning hams to the hobby?

01:06:16

Ron Demcko

I think number one, I felt guilty that I was out so much or for a few years. But the problem there is you got to pay the bills. Right? So I'd say number one, don't feel guilty and then jump back in full speed. I went back to CW just because I find it helps my memory. I actually think it helps my coordination and dexterity so that's a big deal for me. The other thing is boy experiment for the new modes and hit hamfest because I think the free flow of information just like you're talking about on the web. But these hemp fests, oh you could pick up so much information and advice and good deals, you kind of don't know what you're going to walk.

01:07:00

Ron Demcko

Well at least I don't know what I'm going to walk out at any ham fest, but I'm going to walk out with a fair amount of stuff and what a great way to get, you know, an expansion of your hobby right there.

01:07:12

Eric Guth

Did you go to Dayton this year?

01:07:14

Ron Demcko

Yeah, I did for my brother. Right. So we hadn't gone in like 40 some odd years. We, went and had a great time. He flew out to from Phoenix, North Carolina and we drove on up and we were thinking that we're going to take a little convertible that I had and thank goodness we didn't because I had a mid sized SUV just packed. So it was a successful packed to.

01:07:38

Eric Guth

Go there to sell or packed to come home.

01:07:42

Ron Demcko

So hey. Luckily though I got back here, my wife was not upset at all and she thought some of the new purchases were outstanding and they really were. But yeah, so I, I think Dayton's just you know, a wonderful event. I, I guess I'm already hoping to go back next year and heck I bought everything to down to light fixtures for the house that were getting rusted by the sea there. So I found the deal of the century that paid off for my gas up there. I think I bought 30 some odd light fixtures for I think a dollar apiece. And Normally they're about 25 bucks. So, you know, great success. Yeah.

01:08:25

Eric Guth

What do you think is the most interesting purchase that you made at Dayton this year?

01:08:31

Ron Demcko

You know, it's funny, my brother and I, I had talked to John saying, okay, I want to find an old radio shack 10 meter transceiver. And you know, that was my hope I could find one. And he was optimistic that we'll find it. And I, I wanted to think I would, but you know, come the last day of our ham fest or the latter part of the day, lo and behold, we found a brand new one in the box for \$90. So that was just huge for me. I, I really enjoyed picking that up and I'll be putting that probably on a boat, to be honest. It's going to be a blast.

01:09:05

Eric Guth

Was this a single sideband transceiver? Right, but it was amateur radio. Would it also do cw?

01:09:10

Ron Demcko

No, no, it didn't, but that's fine.

01:09:12

Eric Guth

It was a converted 11 meter.

01:09:16

Ron Demcko

That's right. That's right. So. Right, that's it. And I mean it was, it's great. Nice compact. It's going to be super. I'll enjoy that. Then I picked up a Geocron and that was a blast having that thing set up and I'm already a premium subscriber.

01:09:32

Eric Guth

The mechanical Geochrome or no?

01:09:36

Ron Demcko

Yeah, the Atlas too. Right. So the new. Yeah, I, I didn't see any. I always wanted a mechanical one, but boy, I'll tell you that, you know, the odds of me finding one of those I think is pretty low. And then of course the 7300, that was great to pick it back up. In fact, it was a, the second one I bought and they're just tremendous. They're really great little rigs.

01:09:59

Eric Guth

Sadly, I agree with you. One last thing on that. I'm just curious. The kids that are building these cubesats, are they also using satellite rated components for these cubesats or the life and duration of the cubesat life. Would the automobile components be the right thing?

01:10:18

Ron Demcko

Yes, that's a good question in the sense that they're all over the place. So. In fact, I really enjoy working with some of these young college kids. And Caltech's got a great program. There's a whole variety of colleges. I meant, in fact, I mentioned to them that there are certain grades of capacitors and other components that if they have a failure, they'll self heal. So why don't they consider some of those devices. So I'll have to admit when I first started interacting with them they were using consumer grade parts and they were getting very poor mission duration success. They've now gone up to the automobile grade parts and well also sometimes they're going with self healing components as well, which I think that's going to be the next big trend within passives as well as embedded passives inside the active device packaging.

01:11:18

Ron Demcko

But it's interesting one of these guys, in fact he's actually pursuing a kind of a path a little bit like I took with like the component aspect of integrating devices now. So in fact he's I believe now signing on with their. Well I think with IBM. But anyway I think that the young guys are coming around to a little bit more Conservative design on LeoSats and they're getting the good success.

01:11:50

Eric Guth

I was thinking that perhaps these cubesats have a limited life in their orbiting. Do you have a sense of what the lifespan is of a cubesat?

01:12:00

Ron Demcko

I don't. I could say though that there was a. There is a great database that NASA has in terms of the cause of failure and the lifetime duration. I think Aerospace Corp also has that as well. The neat thing is though that we're now exceeding the typical duration just dramatically, I mean orders of magnitude. That's you're finishing up missions and that's a big deal.

01:12:27

Eric Guth

Ron, I've had a wonderful time speaking to you. I know that every guest sends me back their message about how they're new at this, they haven't done this very much, they may not be interesting and I always send them back a message that says of course it'll be interesting. Of course this was interesting. And I really appreciate your coming on the QSO Today podcast with that. I want to wish you 73 and thank you for coming.

01:12:51

Ron Demcko
Well, thank you Eric 73.

01:12:52

Eric Guth

That concludes this episode of QSO Today. I hope that you enjoyed this QSO with Ron. Please be sure to check out the show notes that include links and information about the topics that we discussed. Go to www.qsotoday.com and put in WA2TBQ in the search box at the top of the page. You can sponsor the transcription of this episode or any of the previous episodes by clicking on the Transcription button on every Show Notes page. The cost is \$75 per episode, regardless of the length. We will quickly transcribe the episode and give you credit for your sponsorship. Please send us the call sign of the podcast to make sure that we transcribe what you want. Remember that QSO Today is value for value.

01:13:38

Eric Guth

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01:14:31

Eric Guth

There is a link to that on the QSO Today homepage. Until next time, this is Eric4Z 1UG73. The QSO Today podcast is a product of KEG Media, Inc. Who is solely responsible for its content.