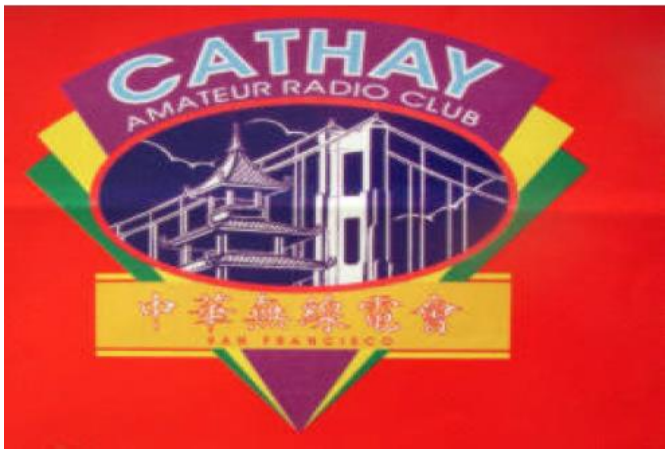

Cathay Sept 2020

www.cathayradio.org

President: George Chong, W6BUR **email:** *W6BUR@comcast.net*
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Vice President South: Bill Fong, *W6BBA* - **email:** w6bba@arrl.net
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Editor: Rodney Yee, *KJ6DZI* - **email:** rodyee2000@yahoo.com
Treasurer: Vince Chinn aka Mingie, *W6EE* - **email:** vince@vincechinncpa.com
Web Master: Edison Fong – *WB6IQN* - **email:** edison_fong@hotmail.com
Mission: The Cathay Amateur Radio Club is basically an active social club of Ham Radio Operators and their spouses. We support local community requests for HAM emergency communications. Several of us are trained in CPR/ First Aid and are involved with community disaster preparedness.

Monday Night Net Time: 9 PM Local Time/PST, Repeater: WB6TCS - RX 147.210, TX 147.810, Offset +0.6 MHz, CTCSS/Tone PL100 Hz

Please note: Repeater: N6MNV UHF 442.700 Mhz, Offset +5MHz, CTCSS/Tone PL 173.8 Hz in South San Francisco is cross linked every Monday Night Net at 9 p.m. to WB6TCS 2-meter repeater.

The CARC Monday night net is the best way to find out the latest club news. All check-ins are welcome.

Message from the President: George Chong, *W6BUR*

Hello CARC Members and Friends;

Many thanks to Mr. Denis L. Moore – WB6TCS for the use of his repeater for our CARC Monday Night Net.

I wish to thank our CARC members that set aside their valuable time to participate in our Monday night's nets.

I know many of us are having a difficult time dealing with this COVID-19 pandemic.

I wish to say to all of you, “Stay Strong” and we will get through this together.

I hope that you folks have a Happy Labor Day holiday!

Tech Article Introduction:

Not since 129 year ago when first proposed by Nikolas Tesla (July 1856-Jan 1943) has there been any serious commercial talk about the wireless transmission of electrical power in large amounts over longs distances.

Now that I have peaked your interest, please read the full details in the Tech Article Section.

Chat sub s'em to all you CARC members! - George W6BUR.

Public Service Announcements

HAM CRAM / HAM Licensing

For upcoming HAM Licensing locations please refer to:
http://www.arrl.org/find-an-amateur-radio-license-exam-session

Auxiliary Communications Service (ACS)

The Auxiliary Communications Service (ACS) was organized by the San Francisco Office of Emergency Services (OES) following the 1989 Loma Prieta Earthquake to support the communications needs of the City and County of San Francisco when responding to emergencies and special events.

The Auxiliary Communications Service holds General Meetings on the third Tuesday of each month at the San Francisco Emergency Operations Center, 1011 Turk Street (between Gough Street and Laguna Street), from 1900 hours to 2100 hours local time. All interested persons are welcome to attend.

The ACS Net begins at 1930 hours (7:30 p.m.) local time each Thursday evening, on the WA6GG repeater at 442.050 MHz, positive offset, tone 127.3 Hz. The purpose of this net is to practice Net Control skills, practice checking in with deployment status in a formal net, and to share information regarding upcoming ACS events. Guests are welcome to check in. ACS Members should perform Net Control duty on a regular

basis. On the second Thursday of each month, the net will be conducted on the output frequency of the WA6GG repeater, 442.050 MHz no offset, tone 127.3 Hz, simplex.

For more information, please attend an ACS meeting or check in on a net, or call 415-558-2717.

Upcoming meetings: TBD

Gilbert Gin (KJ6HKD)

Free Disaster Preparedness Classes In Oakland:
http://www.oaklandnet.com/fire/core/index2.html

CORE is a free training program for individuals, neighborhood groups and community-based organizations in Oakland. The underlying premise is that a major disaster will overwhelm first responders, leaving many citizens on their own for the first 72 hours or longer after the emergency.

If you have questions about the recertification process, you may contact the CORE Coordinator at 510-238-6351 or core@oaklandnet.com.

Free Disaster Preparedness Classes In San Francisco – NERT Taught by San Francisco Fire Department (SFFD).

http://sf-fire.org/calendar-special-events

Upcoming events TBD

***SFFD DOT** is the Fire Department Division of Training. All participants walking, biking or driving **enter through the driveway gate on 19th St.** between Folsom and Shotwell. Parking is allowed along the back toward the cinderblock wall.

Visit ***www.sfgov.org/sffdnert*** to learn more about the training, other locations, and register on line. Upcoming Special NERT Events.

San Francisco Police Department: Auxiliary Law Enforcement Response Team (ALERT)

The Auxiliary Law Enforcement Response Team (ALERT) is a citizen disaster preparedness program designed. The ALERT program is for volunteers 16 years of age or older, who live, work, or attend high school in San Francisco.

Graduates of the San Francisco Police Activities League (P.A.L) Law Enforcement Cadet Academy are also eligible to join.

ALERT volunteers will no longer need to complete the Fire Department's Neighborhood Emergency Response Team (NERT) (www.sfgov.org/sfnert) training and then graduate into two 8 hour Police Department course specifically designed for ALERT team members.

ALERT members will work closely with full-time and/or Reserve Police Officers in the event they are deployed after a disaster. The Basic ALERT volunteer will have no law enforcement powers other than those available to all citizens.

SFPD ALERT Training (New Members)

The next SFPD ALERT training class has been scheduled for **TBD**. The class will be held at the San Francisco Police Academy, in the parking lot bungalow, from 8am-5pm (one hour lunch break) on Saturday.

* Class date indicated are only for new members

IMPORTANT- All participants must complete the background interview process in order to be eligible to attend the ALERT training class.

Eligible ALERT participants may register for a training class by contacting the ALERT Program Coordinator, Marina at sfpdalert@sfgov.org, or by telephone at 415-401-4615.

SFPD ALERT Practice/Training Drill

All active/trained ALERT members are asked to join us for our next training drill, scheduled for on **TBD** from 9 AM – 1pm. Details will be emailed to active ALERT members, prior to the date of the exercise. Participation is not required, but strongly encouraged.

For more information on the San Francisco Police Department ALERT Program, email us at sfpdalert@sfgov.org, or call Lt. Marina Chacon (SFPD Ret.), SFPD ALERT Program Coordinator, at (415) 401-4615.

For additional information on the web please refer to:
https://sfgov.org/policecommission/alert

Technical Article

Press release: NZ start-up launches world-first long range wireless power transmission

August 2, 2020

https://emrod.energy/press-release-nz-start-up-launches-world-first-long-range-wireless-power-transmission/

Kiwi start-up EMROD has developed the world's first long-range, high-power, wireless power transmission as an alternative to existing copper line technology.

The Emrod technology works by utilising electromagnetic waves to safely and efficiently transmit energy wirelessly over vast distances. The prototype received some government funding and was designed and built in Auckland in cooperation with Callaghan Innovation.

It has received a Royal Society Award nomination, and New Zealand's second largest electricity distribution company, Powerco, will be the first to test Emrod technology.

The company was founded by serial tech entrepreneur Greg Kushnir, who was determined to find a technology that can reduce power distribution costs, avoid outages and support renewable energy.

"We have an abundance of clean hydro, solar, and wind energy available around the world but there are costly challenges that come with delivering that energy using traditional methods, for example, offshore wind farms or the Cook Strait here in New Zealand requiring underwater cables which are expensive to install and maintain," said Mr Kushnir.

“I wanted to come up with a solution to move all that clean energy around from where it’s abundant to where it’s needed in a cost-effective, eco-friendly way.

“Energy generation and storage methods have progressed tremendously over the last century but energy transmission has remained virtually unchanged since Edison, Siemens, and Westinghouse first introduced electric networks based on copper wires 150 years ago.”

When Mr Kushnir investigated ways to transmit energy wirelessly over vast distances he was struck by how little has been done in the field.

“Everyone seems to be fixated on the notion that energy comes to consumers as electricity over copper wires and I knew there had to be a better way,”

Kushnir approached distinguished NZ scientist Dr Ray Simpkin of Callaghan Innovation who lead a feasibility study and worked on the prototype. Callaghan Innovation backed Emrod with a research and development grant and seconded their lead scientist to work on the game changing prototype.

By significantly reducing infrastructure costs, Emrod’s technology has the capacity to support remote communities such as in Africa and the Pacific Islands by providing access to cheap, sustainable energy to power schools, hospitals, and economies.

“The statistics are pretty compelling. We are talking about a potential 50 per cent increase in sustainable energy uptake, up to 85 per cent reduction in outages and up to 65 per cent reduction in electricity infrastructure costs due to the Emrod solution,” said Kushnir.

Powering our local communities

The company has achieved strong interest from electricity distributors with Powerco, New Zealand’s second-largest distributor deciding to invest in a proof of concept of the technology.

“We’re committed to innovation, and finding new ways to deliver power safely and efficiently to our customers”, says Powerco’s Network Transformation Manager Nicolas Vessiot.

“We’re interested to see whether Emrod’s technology can complement the established ways we deliver power. We envisage using this to deliver electricity in remote places, or across areas with challenging terrain.”

“There’s also potential to use it to keep the lights on for our customers when we’re doing maintenance on our existing infrastructure.”

Emrod will deliver the next prototype to Powerco in October and will spend two to three months carrying out lab testing and training Powerco personnel before moving to a field trial.

“The system we are currently building for Powerco will transmit only a few kilowatts but we can use the exact same technology to transmit 100 times more power over much

longer distances. Wireless systems using Emrod technology can transmit any amount of power current wired solutions transmit," said Kushnir.

Safety is Paramount

Safety of the prototype is also front of mind for Emrod, who is using a non-ionizing Industrial, Scientific and Medical frequency (ISM) band to transmit power.

The company has been communicating with the regulator Radio Spectrum Management (RSM) continuously from the get go and maintaining the highest safety standards.

"The rigorous process we are undertaking is aimed at proving the technology is safe with higher power levels on a larger scale. It also helps in creating maintenance guidelines for companies like Powerco that will be using our devices," said Kushnir.

"We have chosen this widely used and well-regulated frequency because there's a long history of using it safely around humans and its scientifically proven safety guidelines, which are accepted internationally.

Wireless power transmission, opening up a world of possibilities

- August 17, 2020

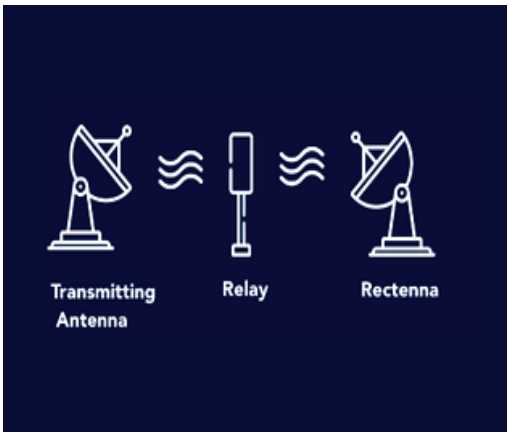
- https://emrod.energy/wireless-power-transmission/

To many, ‘long-range wireless power transmission’ sounds like a confusing jargon strung together in a sentence. To others, it sounds like a futuristic fantasy that was once the not-so-successful pipe dream of Nikola Tesla. To Emrod, it’s a very real solution to some of today’s biggest power supply problems, with endless possibilities to change the world’s landscape (literally).

So, what is long-range wireless power transmission (WPT)? And how can wireless power be used and applied in real-life scenarios?

What wireless power transfer technology is and how it works

Tele-Energy Technology



Advancements in radar and advanced materials technology have made energy transmission over long ranges possible. At Emrod, we have developed unique technology that makes long distance energy transmission safe & reliable for commercial purposes.

Energy is transmitted through electromagnetic waves over long distances using Emrod's proprietary beam shaping, metamaterials and rectenna technology.

Wireless power transmission (WPT) is probably what you imagine it to be; power sent from one location to another without the need for traditional copper coils (or wires) to carry it there. Like wirelessly charging your mobile phone, but on a much grander scale.

Energy is transmitted through electromagnetic waves over long distances using Emrod’s proprietary beam shaping, metamaterials and rectenna technology. The technology requires a transmitting antenna to send the energy, and a receiving antenna (rectenna) to do what it’s name suggests, receive and rectify the beam back to electricity. A relay can be used between the two antennas to extend the distance the energy is able to travel across.

Emrod was founded with a mission to have a positive impact on as many people as possible, so for wireless power transfer to be widely adopted it also had to be safe. And, Emrod does exactly that. The beams use common electromagnetic frequencies in the ISM band that things like WiFi and bluetooth use. Plus, point-to-point transmission means there’s no energy spillage round the beam. If for any reason something were to intersect the beam, like a bird, it immediately shuts down. Meaning the bird never touches anything but clean air. Emrod is unlike a more topical example, 5G, which

spreads low levels of electromagnetic radiation everywhere, inevitably immersing and hitting the human body.

The history of wireless power transmission technology

Transferring energy with microwaves has been around for decades. In fact, back in 1891 Nikola Tesla set out to supply power wirelessly. This led him to create the Tesla coil – the first system that could wirelessly transmit energy. He tested wireless energy transmission using a radio frequency resonant transformer of the Tesla coil. He managed to produce high voltage, high frequency alternating currents that enabled him to wirelessly transfer power over short distances. Unfortunately, Tesla was never successful in developing his coil technology further. However, his inventions did completely transform the way electricity was comprehended and used.

Then in the 70s, NASA showed it could support a helicopter drone in the air by charging it with microwaves from the ground, however they did not develop the technology further to the point where it would be commercially viable… cue Emrod.

What has changed most between now and then is mostly metamaterials technology. New materials have allowed Emrod to convert energy back into electricity incredibly efficiently. Thus enabling the technology to be viable for commercial use.

Use cases for a wireless power transmission system:

Accessing renewable energy and improving transmission to remote locations

Access to reliable electricity is key to economic progress and prosperity. Yet, islands, farms, remote communities, and offshore wind farms often rely on underwater cables or single lines through challenging terrain. Plus, these lines and cables require expensive installation and maintenance. It's no surprise that it is often cost prohibitive and leaves many without a reliable power source. WPT replaces the need for expensive infrastructure upgrades or duplication over difficult terrain.

In these instances, Emrod could reduce installation and maintenance costs by up to 85%. Making it economically viable to harness remote, sustainable energy sources, connect communities and improve network resilience.

With WPT, powering a nature reserve like Stewart Island/Rakiura could be done by beaming sustainably generated hydro-energy from NZ's South Island. Or, it could enable Pacific Island nations to access off-shore renewable energy. Reducing their dependency on diesel generators, bringing electricity to remote communities and lowering the local electricity cost. Not to mention the possibilities of opening up a new export market for them.

Supplying power to the edge of distribution

The last mile (or kilometer) on the power distribution network is costly and often economically unviable. For example, a coastal town surrounded by rugged terrain or a farm that is on the other side of a large valley. In these situations, WPT can be significantly cheaper to install and maintain when compared to traditional power lines, battery, or micro-grid solutions.

A perfect New Zealand example is Piha, a coastal town on the West Coast of Auckland. Not only is Piha tucked away behind mountainous terrain, but it also bears the brunt of strong winds and storms. All of which make it hard for power lines to remain intact and reliable year round.

In New Zealand, Emrod is working alongside Powerco to improve last-mile continuity of supply and economic viability.

Swapping generators for wireless energy transmission

Everyone has likely heard the loud whirring of a generator at some stage in their life. While the noise is annoying at best, we've had to put up with them because they are a convenient, portable device that provide an on-demand power source. Power-critical companies like Telcos and hospitals often use them as emergency back-up systems. However, they are expensive to run, polluting, noisy, and in case of an outage, need some time to deploy or activate.

Instead, planned and unplanned outages can use wireless transmission of electrical energy to bridge the "gap" in the network caused by downed lines. Mobile truck-mounted units or compact permanent systems can beam power to those that need it. Offering a solution to reduce outage downtime time and cost, without the noise and pollution of a traditional generator.

Shaping the future

Above are some ways wireless power transmission can and will help the world, but what about some of the less obvious ways to use the technology?

To work, wireless power transmission systems simply need a direct line of sight from one end to the other in which to send the energy. So with that in mind, what can you dream up?

We imagine a world where Emrod technology is used to power electric vehicles and ships, and to power drones in flight over urban areas or across rural landscapes. To us, even fuel-free airplane flights aren't out of the question.

Watch this space, we're just getting started!