

## Cathay February 2013

[www.cathayradio.org](http://www.cathayradio.org)

**President:** George Chong, W6BUR **email:** [W6BUR@comcast.net](mailto:W6BUR@comcast.net)

**Vice President North:** Leonard Tom, NX6E **email:** [nx6e@hotmail.com](mailto:nx6e@hotmail.com)

**Vice President South:** Bill Fong, W6BBA - **email:** [w6bba@arrl.net](mailto:w6bba@arrl.net)

**Secretary/Membership:** Bill Chin, KC6POF - **email:** [bill.kc6pof@comcast.net](mailto:bill.kc6pof@comcast.net)

**Editor:** Rodney Yee, KJ6DZI - **email:** [rodyee2000@yahoo.com](mailto:rodyee2000@yahoo.com)

**Treasurer:** Vince Chinn aka Mingie, W6EE - **email:** [vince@vincechinncpa.com](mailto:vince@vincechinncpa.com)

**Web Master:** Edison Fong – WB6/QN - **email:** [edison\\_fong@hotmail.com](mailto: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 PST, Frequencies: 146.67MHz -600KHz PL85.4 and 442.70 +5MHz PL 173.8. The repeaters are linked. The CARC Monday night net is the best way to find out the latest club news. All check-ins are welcome.

## Message from the CARC President: George Chong, W6BUR

Hello CARC Members and Friends;

### **CARC Chinese New Year Luncheon**

A friendly reminder, the CARC is celebrating the Chinese New with a club luncheon at KOME restaurant on February 16, 2012.

Please email Bill Chin ([bill.kc6pof@comcast.net](mailto:bill.kc6pof@comcast.net)) if you are planning to attend the luncheon and the names of your guests. We need the names to make the necessary names tags that you will be required to wear during the luncheon.

**Upon receipt of your payment at the luncheon, you will be issued a plastic CARC name tag that will be your receipt. If you don't wear the issued CARC name tag you will be charged twice for the luncheon, I am sure we don't want that to happen.** Therefore, the wearing of the CARC issued name tags is mandatory.

**At the end of the luncheon, please return the CARC issued name tags to Mingie (W6EE) so they can be repurposed.**

The luncheon details are repeated from the January 2013 newsletter in the latter part of this newsletter.

And don't forget to bring your copy of Ron Quan's book (Build Your Transistor Radio) to the luncheon for him to personally autograph it for you.

To order your own copy of Ron's book: [http://www.amazon.com/Build-Your-Transistor-Radios-High-Performance/dp/0071799702/ref=sr\\_1\\_1?s=books&ie=UTF8&qid=1353752289&sr=1-1](http://www.amazon.com/Build-Your-Transistor-Radios-High-Performance/dp/0071799702/ref=sr_1_1?s=books&ie=UTF8&qid=1353752289&sr=1-1)

### **Attention: New Luncheon Development – from Ed Fong**

#### **The Grand Prize for the CARC Chinese New Year Luncheon Banquet**

Once again by popular demand, we have a killer grand prize, valued at **\$1k**. We took a survey on the Monday night net and it was overwhelming. We are raffling a super grand prize at the luncheon. CARC members and guest will have the opportunity to win this fabulous grand prize with the purchase of raffle tickets. So what could that be? It needs to be a radio with a good reputation and have features that cover everyone's needs. That's got to be a brand new Yaesu FT897. What more can you ask for? Here's are the features:

- full 100 watts output on HF 160-10 meters
- 50 watts out on 6 meters and 2 meters
- 20 watts out on UHF
- all modes on all bands SSB, CW, AM, FM

- *full DSP filters, adjustable from 60Hz to 6KHz.*
- *Dual VFO's, 200 memories.*
- *2 uncommitted slots. Can be used for AC switching powersupply, 4.5 Amp/hr battery, etc.*
- *Spectrum analyzer – built in*
- *Programmable repeater offsets, fully feature PL and DPL*
- *Built in keyer for those that love CW*

**Hey, this is some serious thousand dollar radio.** We need to sell at least a hundred and fifty raffle tickets just to cover the cost of the radio. The raffle tickets are bargained priced at \$5 each. So don't miss out and bring some spare cash for the raffle tickets. This radio meets the demand of the home DX'er, the casual home operator, the weekend camper, and most important, this radio is the ultimate for emergency communications.



Now this is a mighty fine radio. Buy a raffle ticket and this may be yours.

Edison Fong – WB6IQN

### **Edison's Blow Out Christmas Party**

Edison Fong, WB6IQN wrote up a summary of his 2012 Christmas Party that is in this newsletter.

### **Featured Tech Article**

Want to learn a new word and impress both your family and friend, then try this one: "Tensides". You will learn the meaning of the word: Tenside when you read this month's article: "Keeping Electric Vehicle Batteries Cool".

### **CARC Final Wrap News:**

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>

**Bart Lee – K6VK**

### Attention all HAM, it is MayDay!!

The California Historical Radio Society (CHRS) and its amateur radio station W6CF is caught up in its landlord's bankruptcy (Inner Cities Broadcasting). This forces CHRS to purchase the Berkeley KRE building and property now or lose it.

### UPDATE

**THE NEWS WE HAVE BEEN WAITING FOR SINCE JUNE IS HERE. CHRS ENJOYS A LONG STANDING RELATIONSHIP WITH ONE OF THE BIDDERS AND POTENTIAL NEW OWNER OF KVTO. CHRS HAS A ROCK SOLID AGREEMENT WITH THIS BIDDER TO PURCHASE KRE IF THE BID PREVAILS. THIS IS THE CLOSEST WE HAVE BEEN TO OWNING KRE. WE WILL GET THE OK TO PURCHASE KRE BY NOVEMBER 9TH OR SOONER. AS SOON AS WE GET THE OK, WE WILL CALL FOR YOU TO FULFILL YOUR PLEDGES.**

**TODAY'S UPDATE – January 14th** – We started with **\$93,000** in our Museum Fund June 1st, and today we have **253** donations and pledges totaling **\$676,130!** THANK YOU! Our goal is **\$750,000+**. We only have **\$73,870 to go!** Holy Cow, we have already raised nearly three quarters of a million dollars! It's downhill from here. We have done so well, please dig deeper and make this happen! We should be able to raise the rest with your help and support.

THESE EVENTS DO NOT MEAN AN END TO OUR FUNDRAISING BY ANY MEANS. WE ARE AWARE THAT SOME OF YOU MAY NOT BE ABLE TO FULFILL YOUR PLEDGES, SO OTHERS MUST STEP AND PLEDGE FOR THE FIRST TIME OR INCREASE YOUR PLEDGES. WE ALSO HAVE INSURANCE, OPERATING COSTS AND FUTURE EXPANSION PLANS FOR KRE TO CONSIDER. PLEASE PLEDGE NOW. WE HAVE AMAZED THOSE OUTSIDE OF CHRS FOR OUR ABILITY TO REALIZE ALMOST ALL OF OUR GOALS IN A VERY SHORT TIME. WE KNOW THAT YOUR SUPPORT AND THE SUPPORT OF OTHER ORGANIZATIONS HAS BEEN

TREMENDOUS. WE WILL BE ABLE TO DO THIS, WITH YOUR HELP.

MANY OF YOU HAVE ASKED TO BE MADE AWARE OF WHEN WE ARE GETTING CLOSE TO OUR GOAL SO YOU COULD INCREASE YOUR PLEDGES. NOW IS THAT TIME. THE PUSH IS ON. SO, PLEASE DIG DEEPER AND REMEMBER THE THOUSANDS OF HOURS OF SWEAT THAT YOUR CHRS BROTHERS AND SISTERS HAVE PUT INTO THIS PROJECT. WE KNOW THERE ARE MANY PEOPLE READING THIS WHO HAVE NOT PLEDGED. WE ARE VERY CLOSE. YOUR PLEDGE WILL MAKE A DIFFERENCE. IF YOU HAVE THOUGHT ABOUT MAKING A PLEDGE, DON'T HESITATE. DO IT NOW AND BE PART OF THIS IMPORTANT EFFORT.

REMEMBER – You can pledge now, but you need not send any funds until we need them. [CLICK HERE TO PLEDGE.](#)

**SUPER DONORS** – The list keeps growing. Be part of it! EVERY pledge and donation means a great deal to CHRS. But it is worth noting several pledges / donations that are really helping us to reach our goal:

<b>Jack Bethards</b>	<b>– \$5,000</b>	<b>Bert Buss</b>	<b>– \$5,000</b>
<b>Elmo &amp; Kim Giovanetti</b>	<b>– \$5,000</b>	<b>Chip Lim</b>	<b>– \$5,000</b>
<b>Tom Nelson</b>	<b>– \$25,000</b>	<b>Robert &amp; Reina Swart</b>	<b>– \$5,000</b>
<b>Judy Mears &amp; Bart Lee</b>	<b>– \$10,000</b>	<b>Norm Howard Lehfeldt</b>	<b>– \$15,000</b>
<b>Larry &amp; Joan Drees</b>	<b>– \$16,600</b>	<b>Tom &amp; Julie Bonomo</b>	<b>– \$25,000</b>
<b>George Patterson</b>	<b>– \$25,000</b>	<b>Gilles Vrignaud</b>	<b>– \$25,000</b>
<b>Norman Leal</b>	<b>– \$75,000</b>	<b>Philip Monego</b>	<b>– \$100,000</b>
<b>Scott Robinson</b>	<b>– \$100,000</b>	<b>John Staples</b>	<b>– \$100,000</b>

**Organization Donors of note:**

The CHRS Central Valley Chapter – \$3750	The Alabama Historical Radio Society – \$1000
The SF Bay Area SBE Chapter 40 – \$1000	The Sacramento SBE Chapter 43 – \$1000
The Mt. Diablo Amateur Radio Club – \$1000	The Delaware Valley Historic Radio Club – \$1000
The Art Deco Society of California – \$500	The Iowa Antique Radio Club and Historical Society – \$500

We are grateful to these fine organizations for their support! And we need more support...

Our \$25,000 Challenge Pledge from Gilles Vrignaud towards our KRE building purchase fund is complete! Thank you Gilles and all who pledged during this challenge. The challenge and matching pledges were worth \$50,000! – Who will step it up and offer a \$50,000 Challenge next?

That is potentially worth \$100,000 and puts us very close to our goal. So, if you have not pledged, do it now! Many people have recently increased the size of their pledges.

You can do the same and we would really appreciate it.

All donations to the CHRS are tax deductible and will be for the good cause of preserving the KRE building.



For additional information see: <http://www.californiahistoricalradio.com/>

### **Auxiliary Communications Service (ACS) - Tony Halog (KR6EG)**

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

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: Tuesday 7pm, February 19, 2013  
Tuesday 7pm, March 19, 2013  
Tuesday 7pm, April 16, 2013  
Tuesday 7pm, May 21, 2013

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](mailto:core@oaklandnet.com).

### **Free Disaster Preparedness Classes In San Francisco – NERT Taught by San Francisco Fire Department**

RSVP to [sffdnert@sfgov.org](mailto:sffdnert@sfgov.org) or call 415-970-2024 to register. Visit [www.sfgov.org/sffdnert](http://www.sfgov.org/sffdnert) to learn more about the training, other locations, and register on line.

#### **February**

2nd: Intro to Ham Communications Team (HCT) 101, 8:30 a.m. - 3:30 p.m., SFFD DOT\*  
New or interested HAM operators beginner course (no license required)  
HAM operators that want disaster communication instruction are welcome after lunch  
Register: <http://www.eventbrite.com/event/5017643908#>

5th: Ham Radio for "dummies", HCT 300 & 301, 6:30pm-9:00pm, SFFD DOT\*  
Get to know your radio. Basic how to instruction: turning on, tuning in, changing batteries etc  
(Amateur Radio license required)  
Register: <http://www.eventbrite.com/event/5017748220#>

6th: Ham Emergency Messaging for the non-hobbyists (hobbyists allowed), HCT 303,  
6:30pm-9:00pm, SFFD DOT\* Learn and practice creating emergency messages



(an important skill for ALL NERTS) and practice talking on the radio (Amateur Radio license required). Overcome your hesitation and just do it.  
Register: <http://www.eventbrite.com/event/5017796364#>

7th: Advanced Ham Radio for "dummies" Ham Communications Team (HCT) 400  
Hands on training, 6:30pm- 9:00pm, SFFD DOT\*

Bring your radio and practice, practice, practice: buttons, antennas and tones etc.  
(Amateur Radio license required)  
Register: <http://www.eventbrite.com/event/5017828460#>

16th: **Neighborhood Coordinator/Leadership College**, 8:30am-4:00pm, SFFD DOT\*  
Register: <http://www.eventbrite.com/event/5017862562#>

27th: NERT Coordinators and Leaders Meeting. 6:30pm-8:30pm, SFFD DOT\*  
All NERTs welcome  
Register: <http://www.eventbrite.com/event/5017990946#>

### **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 first complete the Fire Department's Neighborhood Emergency Response Team (NERT) ([www.sfgov.org/sfnert](http://www.sfgov.org/sfnert)) training and then graduate into an 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.

As part of their commitment, community members volunteering as an ALERT member will be required to attend two drills per year to maintain their program status and certification.

Every two years, the ALERT member will be required to attend an update course.

For more information please refer to: <http://sf-police.org/index.aspx?page=4019>



## **2013 CARC Annual Chinese New Year Luncheon (Repeat Announcement)**

As for those of you that were able to attend the CARC luncheon last year, we enjoyed seeing each other and yakking it up. As word spread about our successful CARC luncheon get together, those who did not make it told us "We will be there for the next one". This year it will also be a great opportunity to meet up with our newest club members.

The time and Date: Saturday 10:30 AM - 1:00 AM February 16, 2013.

Location: KOME Japanese Seafood and Grill  
1901 Junipero Serra Blvd.,#A  
Daly City, CA 94104  
650-992-8600

Parking: There is free parking in the adjacent five story garage structure.

Cost: Special CARC Adult cost will be \$22.00 per adult.

Seniors over age 60 pay \$21.00

Children Pricing:

Age 3-5: \$7.00

Age 6-8: \$9.00

Age 9-11: \$11.00

These Saturday prices includes: tax (8.50%), 15% tip, and reserved seating along with soda and tea.

**Please note that beer/wine/sake is not included with the price of the luncheon. If you order beverages not covered, you are responsible for paying the additional charges.**

For more info please see: [www.komebuffet.com](http://www.komebuffet.com) (The link appears to be currently down).

**Money will be collected at the start of the luncheon, so please have exact change ready! Please put on name tags that will be provided.**

**Please email Bill Chin ([bill.kc6pof@comcast.net](mailto:bill.kc6pof@comcast.net)) if you are planning to attend the luncheon and the names of your guests. We need the names to make the necessary names tags that you will be required to wear during the luncheon.**

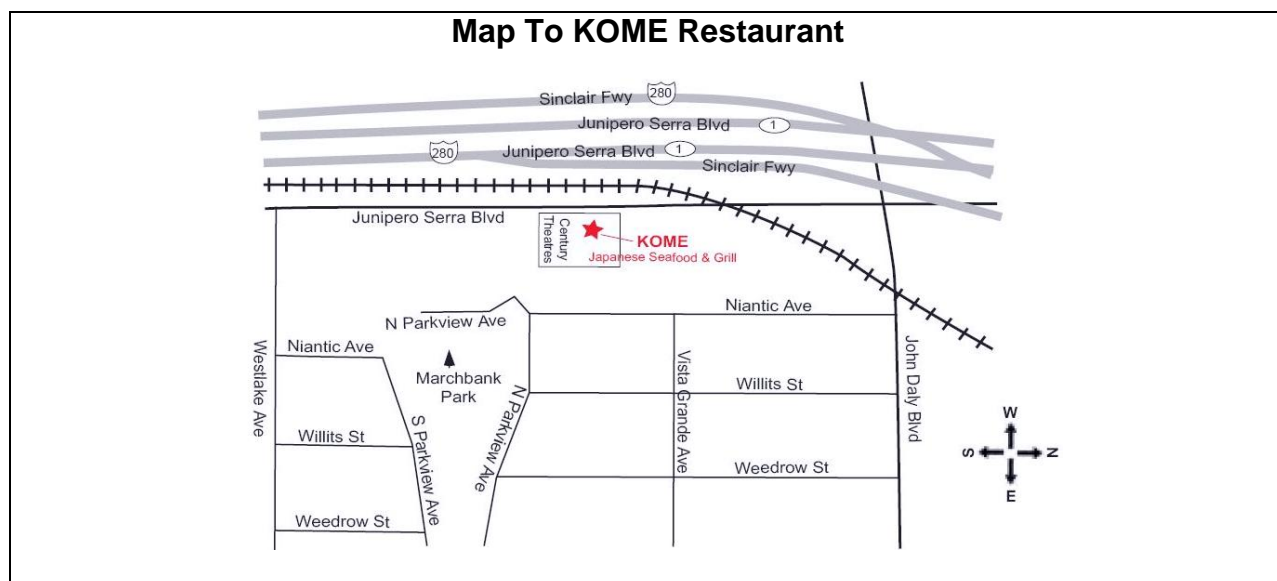
### Driving Directions:

\* If coming from Hwy 280 Northbound, take the John Daly Blvd/Junipero Serra Blvd exit and continue north on Junipero Serra Blvd and side drive past the Century Theater ticket office.

After a series of small restaurants on the right hand side there is a 5 story parking garage, the entrance will be about 50 feet past KOME restaurant entrance doors.

\* If coming from Hwy 280 Southbound, take the John Daly Blvd/Junipero Serra Blvd exit. After crossing the traffic signal light intersection, in about 500 feet, turn left into the 5 story parking garage structure entrance.

Please refer to the KOME restaurant location map that follows below:



We have reserved the back area room at the KOME restaurant for use of the Cathay Amateur Radio Club. **At the restaurant door please identify yourself as being with the CARC and a KOME hostess will escort you to the back room. Please check in with both Vince Chinn aka Mingie W6EE and Hetty WB6SHU so they can check you name off the attendee list and collect the money to pay the restaurant.**

Hetty WB6SHU will make sure those senior citizens will get their dollar discount. Be aware that the early bird gets the worm, no feeding after 1PM; I hope we won't have to be booted out, hah-hah!

KOME restaurant is an all you can eat Asian buffet style dining offering a large choice of foods. KOME restaurant is where we held our previous Cathay Radio Club Chinese New Year Luncheon and it was a big hit with all the attendees. There is free parking at the adjacent 5 story parking structure. The Daly City Bart train stop is 2 blocks away.

Since KOME restaurant opens its door at 10:30 AM we need to have most of our people "camp" early (kidding) at the door to situate our "hold" of a spot (within the glass partition) at the rear room. **Another reason to arrive early is that the luncheon time (10:30 am-1pm) will quickly slip away while you are getting caught up with the latest news among our fellow club members.** The back room is fairly large is able to accommodate 150 guest. I doubt that our CARC members and friends would completely fill it, so feel free to invite additional guests.

The dining tables as I seem to recall were sort of like outdoor picnic types with individual chairs for seating. One other hint: If you are a great eater and love food, try not to choose any tables where the opposite end is against a wall. I found that it was really hard to maneuver quickly for more goodies!

Your Hosts:

George Cheong - W6BUR  
[w6bur@comcast.net](mailto:w6bur@comcast.net)

Mingie Chinn - W6EE  
[vince@vincechinncpa.com](mailto:vince@vincechinncpa.com)

Bill Chin - KC6POF  
[bill.kc6pof@comcast.net](mailto:bill.kc6pof@comcast.net)

## Edison's Blow out Christmas Party

We all had a great time at the December 15<sup>th</sup> Christmas Party in Sunnyvale. The potluck food was plentiful with dishes from all over the world. You name it, we had it: Chinese, Italian, Korean, Mexican, and even Greek. Desserts were plentiful. Thanks to all that contributed the food. An absolutely fantastic International Buffet was enjoyed without having to collect money for the event.

I counted about 60+ people in attendance and at least a dozen kids. The adults had fun catching up with what went on during the year and the kids were busy playing with the Nintendo Wii, Apple iPad, and Apple iPod touch.

There was no charge for the raffle tickets and each license HAM received one ticket eligible for either a Baofeng UV3 (2 watt 100 channel handheld) or the bigger brother Baofeng UV5 (5 watt 200 channel hand held).

The winner of the Baofeng UV5 was Jim Fahy (W6WKY), the Baofeng UV3 was Jeff Hutchins (WB6BDV). Last I heard, both of them got their new Baofeng radios programmed and are happy campers.

Prof. George Vendelin stopped by and saw many of his former graduate students. George is the author of the standard microwave text book – *Microwave Circuit Design*. Many of us used this textbook in college. Yours truly wrote Chapter 1 of that book.

Suresh Ojha (W6KTM) also stopped by. He is the President of the Nepal Amateur Radio Club and is known worldwide for his expertise in disaster communications.



The raffle begins: Diana Lum (KG6IOH), Skip Weiss (KG6SCE), David Chan (NC6D), Ed Fong (WB6IQN), Harry Mar (KJ6DYY), Judy Chan.





Dancing with the Nintendo Wii



David Chan (NC6D) and Harry Mar (KJ6DYY)



Ginger Bread House



Jim Fahy (W6WKY) with his Baofeng UV5



Jeff Hutchins (WB6BDV) holding his newly won Baofeng UV3



Suresh Ojha (W6KTM) and Prof. George Vendelin



Skip Weiss (KG6SCE) and John Wolfson

- Ed Fong WB6IQN



## **Featured Tech Article**

### **Keeping Electric Vehicle Batteries Cool**

Research News Jul 02, 2012

<http://www.fraunhofer.de/en/press/research-news/2012/july/keeping-electric-vehicle-batteries-cool.html>

Heat can damage the batteries of electric vehicles – even just driving fast on the freeway in summer temperatures can overheat the battery. An innovative new coolant conducts heat away from the battery three times more effectively than water, keeping the battery temperature within an acceptable range even in extreme driving situations.

The fluid, dubbed **CryoSolplus**, absorbs heat more effectively than either air or water and could allow for tighter packing of batteries under the hood, according to a team of researchers at the Fraunhofer Institute for Environmental, Safety and Energy Technology in Oberhausen.



Heat can damage the batteries of electric vehicles – even just driving fast on the freeway in summer temperatures can overheat the battery. An innovative new coolant, **CryoSolplus** conducts heat away from the battery three times more effectively than water, keeping the battery temperature within an acceptable range even in extreme driving situations.



Batteries provide the “fuel” that drives electric cars – in effect, the vehicles’ lifeblood. If batteries are to have a long service life, overheating must be avoided.

A battery’s “comfort zone” lies between 20°C and 35°C. But even a Sunday drive in the midday heat of summer can push a battery’s temperature well beyond that range.

The damage caused can be serious: operating a battery at a temperature of 45°C instead of 35°C halves its service life.

And batteries are expensive – a new one can cost as much as half the price of the entire vehicle. That is why it is so important to keep them cool.

Thus far, conventional cooling systems have not reached their full potential: either the batteries are not cooled at all – which is the case with ones that are simply exchanged for a fully charged battery at the “service station” – or they are air cooled.

But air can absorb only very little heat and is also a poor conductor of it. What’s more, air cooling requires big spaces between the battery’s cells to allow sufficient fresh air to circulate between them.

Water-cooling systems are still in their infancy. Though their thermal capacity exceeds that of air-cooling systems and they are better at conducting away heat, their downside is the limited supply of water in the system compared with the essentially limitless amount of air that can flow through a battery.

### **More space under the hood**

In future, another option will be available for keeping batteries cool – a coolant by the name of **CryoSolplus**. It is a dispersion that mixes water and paraffin along with stabilizing tensides and a dash of the anti-freeze agent glycol.

The advantage is that **CryoSolplus** can absorb three times as much heat as water, and functions better as a buffer in extreme situations such as trips on the freeway at the height of summer.

This means that the holding tank for the coolant can be much smaller than those of watercooling systems – saving both weight and space under the hood. In addition, **CryoSolplus** is good at conducting away heat, moving it very quickly from the battery cells into the coolant.

With additional costs of just 50 to 100 euros, the new cooling system is only marginally more expensive than water cooling. The coolant was developed by researchers at the Fraunhofer Institute for Environmental, Safety and Energy Technology UMSICHT in Oberhausen.

As **CryoSolplus** absorbs heat, the solid paraffin droplets within it melt, storing the heat in the process. When the solution cools, the droplets revert to their solid form. Scientists call such substances phase change materials or PCMs. “The main problem we had to overcome during development was to make the dispersion stable,” explains Dipl.-Ing. Tobias Kappels, a scientist at UMSICHT.

The individual solid droplets of paraffin had to be prevented from agglomerating or – as they are lighter than water – collecting on the surface of the dispersion. They need to be evenly distributed throughout the water.

Tensides serve to stabilize the dispersion, depositing themselves on the paraffin droplets and forming a type of protective coating. “To find out which tensides are best suited to this purpose, we examined the dispersion in three different stress situations: How long can it be stored without deteriorating? How well does it withstand mechanical stresses such as being pumped through pipes? And how stable is it when exposed to thermal stresses, for instance when the paraffin particles freeze and then thaw again?” says Kappels.

Other properties of the dispersion that the researchers are optimizing include its heat capacity, its ability to transfer heat and its flow capability. The scientists’ next task will be to carry out field tests, trying out the coolant in an experimental vehicle.

Fraunhofer Institute for Environmental, Safety and Energy Technology UMSICHT  
Osterfelder Str. 3  
46047 Oberhausen, Germany  
Phone +49 208 8598-1347 Fax +49 208 8598-1290

### **CARC Editor’s note:**

**Tensides** are detergents that break down the surface tension of the water. This enables a better wetting of the fibers, helping to remove oily and fatty soiling from textiles.

There are four main groups of tensides:

1. anionic tensides
2. non-ionic tensides
3. cationic tensides
4. amphoteric tensides

Source - <http://www.dr-beckmann.de/en/faqs/answer/36/page/3/>