Southern Oregon Corvette Association

March 2023

Newsletter

SOUTHERN OREGON CORVETTE ASSOCIATION, LLC
WWW.SOVETTE.COM
106 NW F St. # 222, Grants Pass, Oregon 97526
501(c) (7) Non-Profit Organization • Federal Tax I.D. #91-1819589

March 2023 NEWSLETTER

Next Club Social

The next club Social is on March 18, 2023. For more information, see the "Events" section (page 5) for details.

Upcoming Meetings

General Membership Meeting, Wednesday, April 5, 2023, **6:30 p.m.** at the Rogue River Community Center, 132 Broadway Street, Rogue River.

Visitors are always welcome!

Why Join SOCA?

•Promote *esprit de corps* among Corvette enthusiasts.
•Create interest in the Corvette as a true dual-purpose sports car.
•Provide a means of technical information and service to members.
•Encourage dealer and manufacturer cooperation.
•Organize and promote events of a social nature and provide social gatherings for enthusiasts with common interests.
•Sponsor or participate in activities to benefit the community through recognized charities as selected by the members of the Association.

SOCA Logo Apparel
Competitive Athletics, 105 NE 7th St., Grants Pass
(541) 479-1001

OFFICERS:

Elected Officers

President:	Ron Howard
Vice-President:	Wayne Shelford
Secretary:	TBD
Treasurer:	Carol Misner
Sgt-at-Arms:	Larry Weiner
Membership:	TBD
President (2022):	Cathy Cardoza

Appointed Positions

Sunshine:	Sandee Anderson
Activities:	Kim Moore
Communications:	Gar Stevens
Internet Site:	Sharon Hook-Martino, Elaine Ellis
Parade Coord:	Kerry Razza
Natl Corvette Museum:	Len Atlas
Facebook::	Tammi Moore
Newsletter:	Rob Hill

BIRTHDAYS AND ANNIVERSARIES:

April Birthdays

Scott Bayless
Brian Farber
Bill Martino
Rob Cherry
Julie Rogers
Patty Howard
Brandon Bretl
Rob Hill
Leslie McCullough
Siro Bignotti
Elyse Douglas
Carol Reynolds

April Anniversaries

James & Keri Johnson
Joe & Mariann Chavez
Frank & Robin Miranda
Len & Marga Atlas

EVENTS:

2023 **Southern Oregon Corvette Association (SOCA) Events**

	Jan	*Feb*	*Mar*	*Apr*	*May*	*Jun*	*Jul*	*Aug*	*Sep*	*Oct*	*Nov*	*Dec*
Club meeting (Wed.)	*4*	*1*	*1*	*5*	*3*	*7*	*5*	*2*	*6*	*4*	*1*	*6*

All dates below are Saturdays, except as noted … The dates shown are tentative and subject to change or cancellation.

March:

Social: **18** Original Roadhouse, 2699 W Main St, Medford, OR, 97501, at 6:00 p.m.
Please RSVP by Mar 14, 2023 to garstev1@gmail.com

30 Rock Steady Band at Taprock Northwest Grill, 971 SW Sixth St, Grants Pass, OR, 97526, from 6 to 8 pm

April:
TBD

For additional events, information, and links … see the SOCA website "Events Page:" https://www.sovette.com/events

Social Dinner at Sweet Tea Express on February 18, 2023:

Temperature effects on battery capacity and service life - **Prostar** March 13, 2019

Article

As we know, all chemical reactions are affected by temperature, and a battery relies on chemical reaction to generate power. One can easily infer that temperature does affect power of a battery. The optimum functioning of a battery is at room temperature. With a slight deviation in temperature, changes can be seen in capacity and service life.

When temperature is elevated, battery capacity increases due to decrease in internal resistance and increase in chemical metabolism. However, if such conditions persist for a long duration, the service life of the battery shortens. At elevated temperature of 50°C, the performance of the battery increases by 12%.

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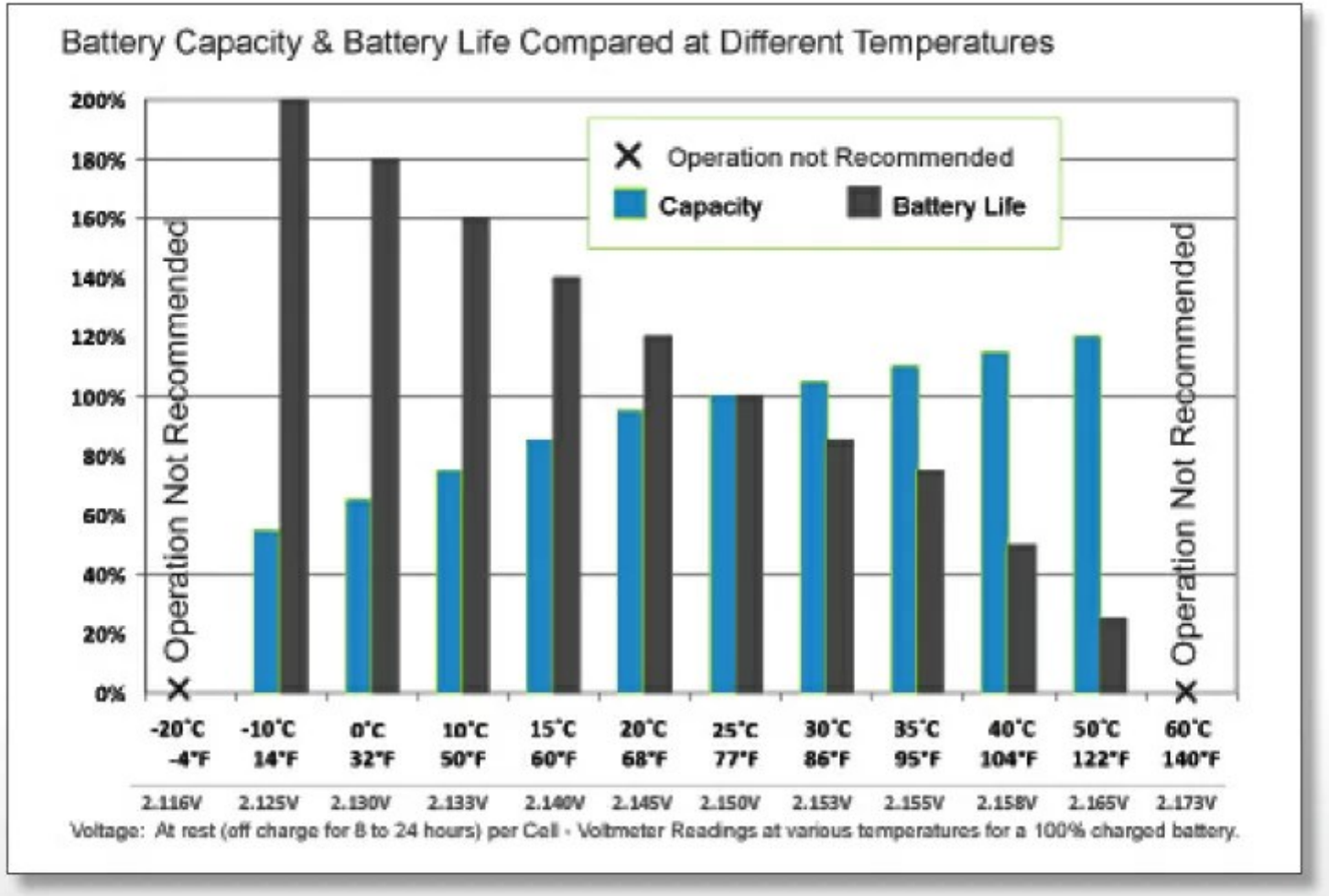

Figure 1. Battery capacity & battery life compared at different temperature

On the contrary, lower temperature increases internal resistance and reduces the rate of chemical metabolism, and thus results in a decrease in the capacity of the battery. If a battery's capacity is 10% at 27°C, it lowers significantly to 50 percent, once temperature is 18°C. At freezing point, the capacity of the battery reduces to 20 percent. At -20°C, most batteries stop functioning. Now you might have understood why your car's battery dies on a cold morning. At freezing point, aqueous electrolyte containing batteries such as lead-acid, stop functioning due to freezing of the electrolyte itself. In the case of a lithium-ion battery, lithium plating (accumulation) on the anode occurs at extreme low temperatures, resulting in permanent reduction of the capacity.

Temperature also affects service life of a battery. Battery performs best at room temperatures. If temperature is increased to 30°C for a long duration of time, service life of the battery reduces by 20 percent. While at 45°C, the life-cycle is reduced considerably to 50 percent.

Like humans, batteries function best at room temperature. Warming a dying battery in a mobile phone or flashlight in our jeans might provide additional runtime due to improved electrochemical reaction. This is likely also the reason why manufacturers prefer to specify batteries at a toasty 27°C (80°F). Operating a battery at elevated temperatures improves performance but prolonged exposure will shorten life.

As all drivers in cold countries know, a warm battery cranks the car engine better than a cold one. Cold temperature increases the internal resistance and lowers the capacity. A battery that provides 100 percent capacity at 27°C (80°F) will typically deliver only 50 percent at –18°C (0°F). The momentary capacity-decrease differs with battery chemistry.

The dry solid polymer battery requires a temperature of 60–100°C (140–212°F) to promote ion flow and become conductive. This type of battery has found a niche market for stationary power applications in hot climates where heat serves as a catalyst rather than a disadvantage. Built-in heating elements keep the battery operational at all times. High battery cost and safety concerns have limited the application of this system. The more common lithium-polymer uses gelled electrolyte to enhance conductivity.

All batteries achieve optimum service life if used at 20°C (68°F) or slightly below. If, for example, a battery operates at 30°C (86°F) instead of a more moderate lower room temperature, the cycle life is reduced by 20 percent. At 40°C (104°F), the loss jumps to a whopping 40 percent, and if charged and discharged at 45°C (113°F), the cycle life is only half of what can be expected if used at 20°C (68°F).

The performance of all batteries drops drastically at low temperatures; however, the elevated internal resistance will cause some warming effect by efficiency loss caused by voltage drop when applying a load current. At –20°C (–4°F) most batteries are at about 50 percent performance level. Although NiCd can go down to –40°C (–40°F), the permissible discharge is only 0.2C (5-hour rate). Specialty Li-ion can operate to a temperature of –40°C but only at a reduced discharge rate; charging at this temperature is out of the question. With lead acid there is the danger of the electrolyte freezing, which can crack the enclosure. Lead acid freezes quicker with a low charge when the specific gravity is more like water than when fully charged.

Techin & Toolin

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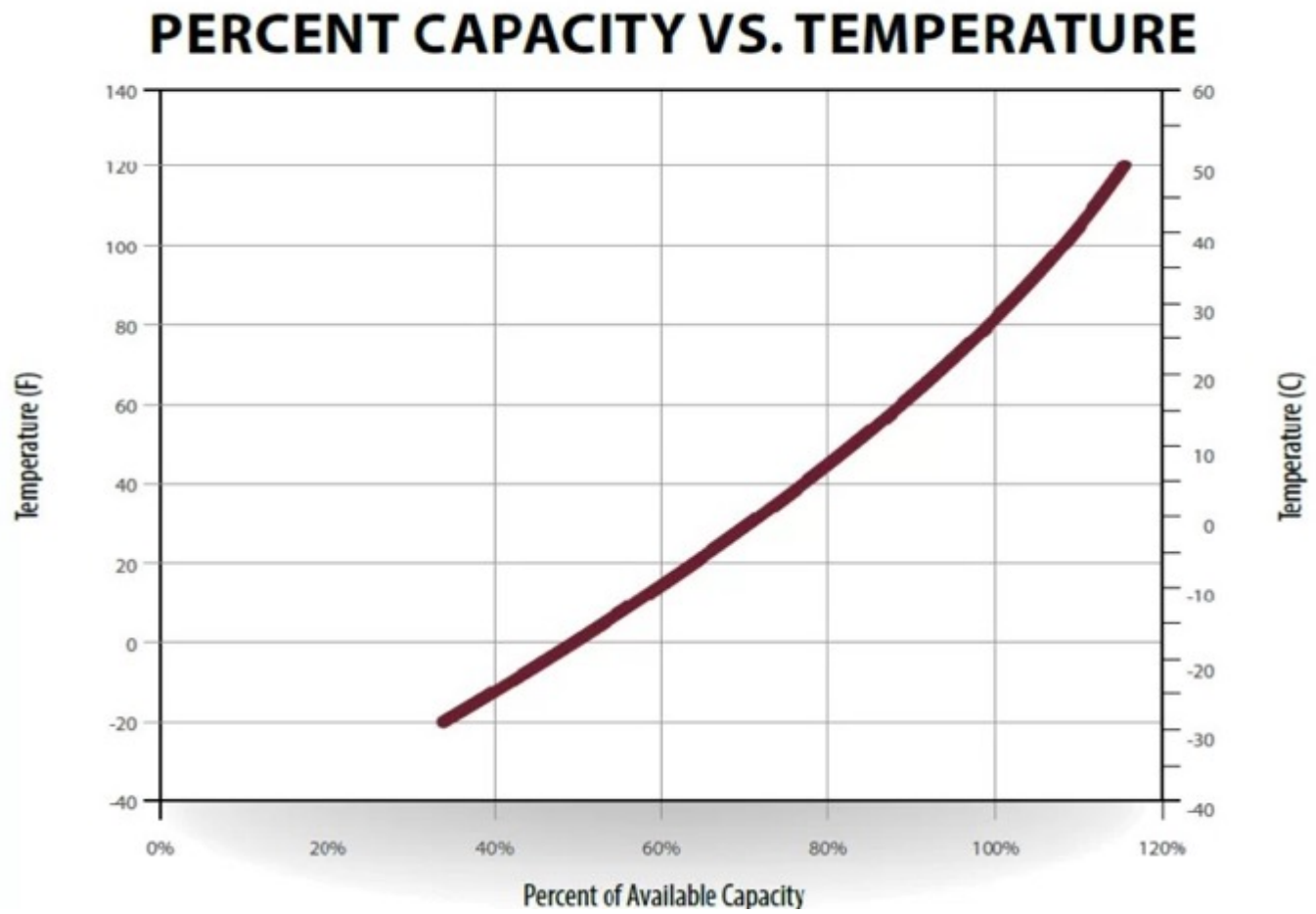

Matched cells with identical capacities play an important role when discharging at low temperature and under heavy load. Since the cells in a battery pack can never be perfectly matched, a negative voltage potential can occur across a weaker cell in a multi-cell pack if the discharge is allowed to continue beyond a safe cut-off point. Known as cell reversal, the weak cell gets stressed to the point of developing a permanent electrical short. The larger the cell-count, the greater is the likelihood of cell-reversal under load. Over-discharge at a low temperature and heavy load is a large contributor to battery failure of cordless power tools.

The driving range of an electric vehicle between charges is calculated at ambient temperature. EV drivers are being made aware that frigid temperature reduces the available mileage. This loss is not only caused by heating the cabin electrically but by the inherent slowing of the battery's electrochemical reaction, which reduces the capacity while cold.