

## TIPS & STRATEGIES TO KEEP YOU AFLOAT

# Three Ways To Keep the Boat Charged and Running Smoothly: Solar, Wind & Water Generators

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It was a bright, sunny summer day. Rona just gave birth to a baby girl, and she and her husband still didn't have a name. Just then, a robin perched on the windowsill and looked right at them. Along came a wind gust and knocked the bird off. "That's it!" they cried. "We'll call her Robin Gale, like the wind." Of course... that's not actually how I got my name. However, it makes for a great story.

Just like sailing, we have lots of stories and adventures to share. Good or bad. Mother Nature helps us with them. For example, when the wind blows, we can sail with our rails in the water. A sunny day keeps us all on deck enjoying each other's company, while a rainy day has us cold and hunkered down. Done right, Mother Nature also offers us three ways to keep the boat charged and running smoothly—with solar, wind, and water.

To write this article, I spoke with a few sailors at both marinas and on sailing forums. What I learned is solar is leading the way. Sailors sail for the tranquility of boating and wind generators disturb that peace and quiet; water generators are still too new for any real opinion.

### Solar Panels

When used correctly, the solar panel works like a battery charger in your car, in that it doesn't need a generator. The best way to determine the right size panel(s) for your boat is to make a chart of how many amp hours you use versus the batteries you have.

For example: your navigational light might be a 25-watt halogen bulb. Divide that by the volt, which is 12, and that equals two-amps.



Multiply those amps by, say, 10 hours at anchor and you've used 20 amps. Now, replace that halogen with an LED bulb and you can burn this bulb for the same amount of time and you'll only use two amps.



Below is a sample table of a select few items with their wattage, volts, and amps, as well as the number of hours you might use these items and how many amps you'll use in that time. To find the correct watts, volts, and amps for

Unit	Qty	Watts	Volts	Amps	Time (hr)	Amp hrs
Halogen bulb	1	25	12	2	10	20
LED bulb (2 nautical miles)	1	1	12	0.2	10	2
Bilge pump (Rule 4000 auto)	1	300	12	15.5	0.1	1.55
VHF (ICOM 330 Fixed)	1	25	13.8	6	1	6
Music w/4 speakers	1	60	12	1.5	4	6
Fans	3	6.5	12	1.2	7	25.2
Laptop	1	100	19	5.3	4	21.2
Fridge (1.5 cu ft)*	1	45	12	2.1	24	50.4

\*The biggest drain on the system is, by far, the refrigerator.

THIS IS AN EXAMPLE TABLE; YOURS MAY VARY.



your units, you could check the product itself, the packaging, or the manual. Otherwise, you can look on the manufacturer's website for their spec sheet. Occasionally, you may need to convert their data to US measurements. For example, manufacturers list volts in double numbers (12/24Vdc). Twelve would be normal voltage size in this case for the U.S.

Tom and Alice Shultz have been actively sailing for the last six years on their 13-year-old sailboat. "We've had solar panels ever since we started," says Tom. "We're on our original batteries for this boat. They are AGM Lifeline, plus a regulator. We have two panels. Each panel puts out 130 watts and 7.5 amps at full peak velocity. It's enough to keep our six 100-amp hour batteries charged."

"When we sail, the panels are flat. At dock or on anchor, angle the panels; otherwise Osprey make nests on them," he adds. Ideally, panels work best when you keep them as close to 90 degrees to the sun as possible, increasing productivity by 25%.

When it has been cloudy for a few days and the voltage in the battery bank drops to 13.25 volts or below, the system kicks on and charges the batteries back to 14.4 volts. Anything less than 11 volts will cause a short out, draining the life of the batteries, like your car battery might leak acid, so monitoring output is essential.

Tom continued, "If you're going to work on solar panels, make sure they're covered. The panels are outputting electricity and will give you a shock."

### Wind Turbines

Wind might be everywhere but it's not always the best choice for a generator. Older hardware gets quite noisy and it's worse at night, leading to complaints from neighboring boats. If it gets too windy (around 20–25 knots), the generator has a clutch that will shut it down to avoid damage. Even when it's running at its best, the power generated is around 4–5 amps. Oh, and they vibrate all the time.



"The meter I had on it indicated it wasn't generating much amperage," says one respondent to my blog post. Bob. "Certainly not enough to offset use of the reefer [fridge] overnight and the need to run the engine the next morning to make up for it... However, sailing in the usual winds (10–15 knots during the day, less at night) didn't add much. Again, the noise detracted."

"My experience," says Bill, another forum respondent, "is that the wind generator MUST have a good brake. The reason is that, whenever we work the main up/down, set/shakeout a reef, I lock the windmill. But, if the brake does not hold, you must be super careful it does not 'eat' a leech furling line."

### Water Generators



Water generators are still new in the U.S. and expensive to use right now. Some styles

will suspend over the stern like an electric outboard, fastened on the transom. They drag along the back of your boat and, although the claim is small, they do weigh you down. This could cause you to lose speeds of one-quarter to one-half knots; when the batteries are full, you'd lift the hydro-generator up out of the water.

Other styles of water generators are straight under the hull, with some also acting as an electric motor such as OceanVolt's ServoProp variable pitch sail drive. This model can be a good option while under sail as the wattage produced exponentially increases with speed.

### My Conclusion

Wind power has such a negative connotation and can be a dirty word. Of course, not by those using it. Some will use both wind and solar or wind and water generators, even when it appears solar is all they really need when calculated properly.

"In the end," suggests Tom, "monitor your batteries like you would money in the bank or water in the tank. Watch the amperage go up and down all the time. That way you are always in charge of what you have."

Remember, before buying your energy saving device, sit down, map or chart out your usage, amps, and watts. Check the cut-off point and how fast you need to be cruising to get your device(s) started. It all depends on what type of sailing you do and how far you'll go and, perhaps more importantly, the kind of stories you want to tell.

### ABOUT THE AUTHOR



Robin is a passionate marine enthusiast and sailor who has interviewed countless industry experts, in the US and abroad. As a freelance writer and business strategist, she helps her clients create, replace, and update both technical and non-technical documents. Her articles include travel, suddenly-in-command, technology and boating secrets, to name a few. Robin is a member of International Travel Writers and Publishers Alliance (ITWPA) and Boating Writers International.

Robin is also the author of "Boating Secrets: 127 Top Tips to Help You Buy and Enjoy Your Boat". This interview series of 11 marine industry experts walks you through everything you need to know from buying a boat to selling it, plus making a living as a professional sailor. It is available in both print and kindle at <https://tinjurn.com/rbomek>.

