

TECH TALK

BY JEFF COTE, PACIFIC

ACHT SYSTEMS



If you're frequently cruising in areas that don't get a lot of sun, thin film panels are a better choice as they typically produce more power from lower light.

price has come down recently, and when savings on replacement batteries are taken into consideration, the price point becomes more reasonable.

CHOOSING AND MOUNTING To properly maintain the batteries, panels have to produce as much power as you're using daily, so the number and size of solar panels you'll need is specific to your power use habits. When solar panels were first developed for use as power sources on satellites, there weren't a lot of options beyond how many and what size panels to get. The technology has certainly improved since then. Newer panels are lighter and produce more power in a smaller area, and there are also other options to consider.

Different types of panels will have different performance in low light conditions. If you're frequently cruising in areas that don't get a lot of sun, thin film panels are a better choice as they are typically better at producing power from low light. Modern thin film "flexible" panels are light, many can be walked on, and they'll typically have a variety of mounting options for a dodger or other convenient location, such as zippers, taping them down, or using grommets and tying them down. For some boaters this drastically increases the number of places available to place the panels.

That being said, traditional heavy-framed crystalline panels can still produce more power overall for a given size panel. However, they do require more permanent and sturdy mounting options and since they are made of glass, walking on them can shatter them. There are typically fewer places to put a crystalline panel on a boat. For the most power, panels should be moved to face the sun throughout the day.

The brand selected also makes a difference. Good quality panels will be warrantied for 20 years or more, with a guarantee on performance as well as any manufacturer faults. Panels with

Solar Panels

Solar panels are an eco-friendly way to supplement your boat's electrical system

FOR BOATERS WHO TRAVEL away from marinas, power is frequently a concern. While some enjoy the novelty of a candle-lit dinner with only the sounds of the waves, and sleeping when the sun goes down, for many this can get old fast. Turning on a few lights, playing some background music, or running a laptop to get some work done can use power quickly, let alone running a toaster, coffee maker, or microwave. While they won't replace running an engine or generator, when you want a bit more power or a backup source, solar panels are a great solution.

THE BENEFITS Solar panels are useful to charge and maintain batteries in sunny conditions. They are a clean, renewable energy product, since they don't use fuel. However, the amount of power they provide depends on the amount of light. Shady and short days will mean less power is available. As well, more power

is delivered at midday when the sun is directly overhead than in the morning or late afternoon, so you will notice fluctuations in output throughout the day.

There are two main benefits to having solar panels on board. Firstly, solar panels provide more power to use throughout the boat. Not having to use the engine to charge batteries is a huge benefit to boaters who want to stay on the hook for extended periods, or for sailors who don't run the engine very often when they're travelling. A generator can provide much more power, but it's much louder, requires fuel and produces exhaust. So, if your neighbours are still sleeping, they will definitely appreciate solar panels. Solar panels are a consideration for anyone going offshore as extra backup power and they can also prevent under-charged batteries. When a battery isn't charged to full capacity its lifetime is shortened; therefore, having batteries topped up daily by a solar panel can extend their life. Panel

these lengthy warranties traditionally have longer lifetimes and perform better due to stricter quality control practices. Furthermore, a waterproof junction box and wiring connectors make all the difference in a maritime environment for a long and productive panel life.

SHADING Regardless of which type of panel is used on a boat, it is important to consider shading when selecting a mounting location. Solar panels that are shaded will not be able to produce power. The important takeaway is that the whole panel doesn't have to be in shade to reduce the power output to zero. Even a thin shadow from a rope stretching across only a small fraction of the panel can prevent the whole panel from producing power.

"Shade protection diodes" are a feature that will split a panel into two sections, so if there's shade on one half, only half of the panel stops producing power, while the half that is completely sunny will still be producing power. For

many mounting locations, this feature is very key because it's difficult to completely prevent shading at all times.

MORE POWER You'll also need a solar charge controller. Solar charge controllers are electronic devices that connect solar panels to batteries. They ensure batteries are properly charged, and the panel is able to produce power. For the most power, choose an "MPPT" model. These controllers always ensure that the panel is producing the maximum amount of power for the given light conditions, so your panels will perform better. This is especially important for bigger solar installations and low light conditions.

CONCLUSION Solar panels are a silent, clean way to give your boat more available power. Recent advances in solar panel technology have seen panels producing more power and becoming thinner and lighter. There are many options to choose from that will affect how much power the panels deliver,

but for the tough marine environment, quality is an important factor.

While they are still a costly investment, many boaters enjoy having panels on board. Whether it's because they don't need to carry extra fuel to run a generator or engine, or don't have to bother the neighbours in a secluded anchorage, the benefits of solar panels could help make this summer on the water even better. ☺

Pacific Yacht Systems
marine electronics & electrical

Jeff Cote is a systems design engineer and owner of Pacific Yacht Systems, a full service shop delivering marine electrical and navigation solutions for recreational boats. Visit their website and blog for info and articles on marine electrical systems, projects and more.
www.pysystems.ca

GET ON BOARD AND GET READY TO RACE

June 23-24, 2012



REGATTA
2012

Racing | Entertainment | Barbecue | Auction | Awards & Prizing



REGISTER TODAY



Support Vancouver Easter Seals House • Keelboat or Dinghy Category
5 Race Courses, 16 Fleets • Sail for Fun in the Easter Seals Cup • Post Race Festivities



www.eastersealswavesregatta.ca • 604-873-1865