The background of the entire image is a vibrant, abstract painting of a sailboat on the water. The painting uses thick, expressive brushstrokes in a palette of blues, yellows, reds, and purples to create a sense of motion and light. The sailboat is positioned in the upper half of the frame, with its sail catching the light. The water below is depicted with swirling, colorful patterns.

48°North

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**Special
Boat Show
Preview**

For Sailors, by Sailors

Dan Hopkins can safely and professionally rewire your boat, but he won't. He wants to empower boat owners, especially new ones, to safely install and learn their own electrical system. Plus, he's retired.

After fifty years in the marine industry, thirty-three spent running his marine systems and electrical business, Whale Back Marine Systems, Dan retired a little more than four years ago. However, he did not choose this timing.

While riding his Vespa to pick up parts Dan was hit by a car. This traumatic accident prompted Dan's retirement as he and his wife, Irene, focused on his recovery. Although the timing was not his choice, Dan has a clear vision of what he plans to do in his retirement.

Dan hasn't gone far from boats. He and Irene have lived aboard a very snug, well-wired 42' sailboat at Shilshole Bay Marina for more than seven years. There, Dan is making a significant difference for several new liveaboard. Dan has helped six nearby boats, with owners of all ages and backgrounds, wire and install a winter essential: heat.

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Boat fires are a significant concern for marinas, neighboring boats, and owners. According to claims filed with Boat US, 55% of boat fires originate in an electrical system, the majority in a Direct Current (DC) system. Dan says many electrical hazards are entirely preventable.



Photo courtesy of Craig and Krystle McMaster.

Dan Hopkins: The Wiring Whisperer

By Cara Kuhlman

"The last place you want a fire, is a boat," said Dan. "Any decent boat electrician has prevented so many boat fires throughout their career," he says. He understands that the decision, and expense, to rewire a boat is not a small one but it is important. Rewiring does not merely provide convenience; it ensures safety.

In the summer, DC-related fires often involving batteries are the primary concern. In the winter, unstable portable heaters and overloaded Alternating Current (AC) systems are of concern as well. Adding a heater

onboard threatens to overload most onboard systems, many of which are decades old. An aging electrical system can be plagued by corrosion and poor connections.

Tracy McKendry, Senior Manager for Recreational Marinas with the Port of Seattle reiterates these onboard hazards. The Port of Seattle's marinas have warning systems to detect additional electrical currents. "The system we have is fairly new and robust," she says.

Marinas are concerned about owners wiring their own boats without professional assistance. Tracy knows this well, "people who are great at working on their boats and home electricity can mess it (boat electricity) up." She encourages boat owners to use professional marine electricians or consult a professional after any electrical installations.

By email Dan concurred, "boat owners should NOT attempt to wire their own boat. The professional they choose should have high

standards, and a good reputation." While rewiring is not a Do-It-Yourself project, owners who are involved can benefit immensely learning from experienced professionals such as Dan.

Over a boat's lifetime, likely with multiple owners, bad connections can breed. Installations and rewiring, done with and without experience, create layer upon layer of wiring. Dan compares the precariousness of this situation to a stack of books, "keep on stacking up the books and you get a real tall stack. But it's a little shaky and doesn't have a very good foundation."

When Dan rewrites he puts in a massive foundation. He over-wires but not frivolously, to make the system extra tough and durable. He teaches this same approach. Each boat he's helped will not only have a safe AC system with heaters but also be able to expand upon that system in the future.

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Jamie and Cami were very cold. Dan's point and shoot thermometer reported 41° inside their boat. Living just across the dock and knowing how much better it could be Dan stepped in, "Let me help you, let's do this."

With Dan's help, Jamie purchased and installed a new AC system and heaters. One evening, as Kami headed home, she prepared for another cold night. She knew they were close to having heat but Jamie said it would still be at least another day. Resigned, she walked down the dock, stepped on board and opened the hatch. When warm air wafted out from the cozy cabin she began to cry.

Chris and Lauri purchased their Kelly Peterson 44 ten years ago and

moved aboard last summer seeking adventure. Now retired, they are using their boat differently than in the past with the challenge of an inadequate electrical system. According to Chris some of the wiring was "substandard and outdated." He eliminated the obvious hazards but a permanent solution was needed.

Knowing Dan had helped others on their dock, Chris approached Dan for some assistance. According to his email, Chris "asked Dan for some advice on heating systems. We discussed various options and decided to install electric heaters. He volunteered to guide me through the process. Dan even helped me shop at the right places to get the best deals on the equipment we needed."

But Dan didn't do the work. Chris ran the wires, mounted the heaters, and installed the electrical panel. Afterwards Dan inspected everything, testing all of the connections and wiring before activating the system.

The project took Chris about a week, much quicker than he expected. Looking back, Chris says, "Dan's expertise was the most helpful as I knew

we would have a safe electrical system at the end of the project. He was also generous with his time and extremely patient, an excellent instructor."

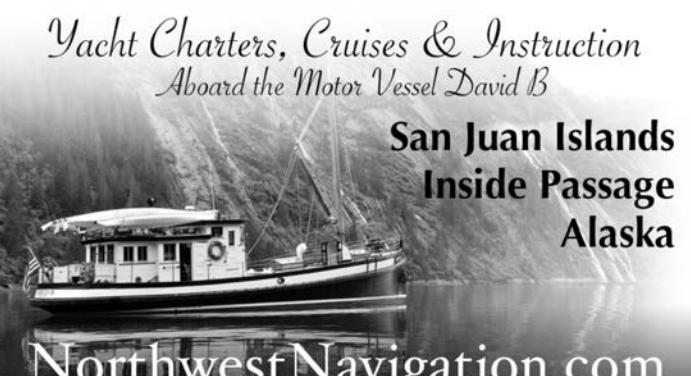
Craig and Krystle McMaster have set their sights on far off cruising destinations onboard a Westsail 42 called *Small World*. Bitten by the sailing bug in college, they purchased their boat a couple of years ago. They decided that living aboard made sense economically and experientially.

After learning about the boat's systems it became clear the electrical needed work. Craig described a situation he called "scary." In an email, he explained the shore cord being poorly located, a rickety electrical box, and frequently tripping the breaker.

They met Dan their first day at the dock, "Our boat was delivered to her slip for the first time and I was just getting on board, wondering to myself "What have we gotten ourselves into?" Within five minutes I heard a knock on the hull. There was Dan with a huge grin on his face, welcoming me to the neighborhood," said Krystle.

When the breaker finally gave out, Craig and Krystle approached Dan for

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Dan's system for cataloging your boat's wiring:

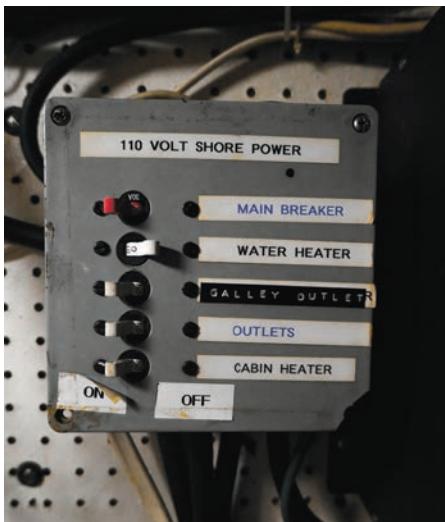
In lieu of providing customers with a technical drawing only another electrician could read, Dan developed this cataloguing system. On average vessels under 50', here is how Dan does it:

Set up six columns in a notebook and get the label maker out. DC wires are numbered 1-499, 500 and up are AC wires.

- Column 1 = wire's number
- Column 2 = what it is (e.g. Fresh water pump +)
- Column 3 = wire's color (red etc.)
- Column 4 = part of what cable (#12/2wire)
- Column 5 = where it originates (e.g. panel terminal strip/ position#)
- Column 6 = where it terminates (e.g. Water pump)

This identification system builds on the assumption that the electrician has followed the accepted color codes for vessel wiring.

help. He readily agreed. Reaching out to the boating community was another new experience for them. Krystle is glad they did, "I don't like to put neighbors out, but Dan and Irene felt like friends and they were happy to help us. Dan loves to teach people what he knows so working with him was amazing."



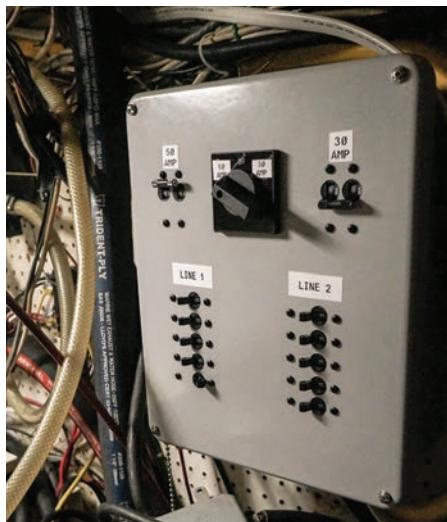
The before-Dan (left) and after-Dan (right) breakers on Craig and Krystle Westsail 42. Their most important takeaway? Asking for help can lead to really great experiences!

When they started, Craig and Krystle described themselves as being "fairly green." Working with Dan was an education. "We learned about the tools that should be included in our arsenal and how to use them; where to shop for parts; brands that can be trusted; the importance of labeling wires and creating a "Wiring Bible" catalog for the boat; and, perhaps most importantly, that asking for help can lead to really great experiences," Craig wrote.

The project was a success. After a week off the boat to complete the project, Craig and Krystle returned to a new quality of life. They say it is an experience that will last beyond this electrical project, "We will always have gratitude for Dan and the incredible sense of independence that he has helped foster."

Calla and Ben moved aboard last summer as well. Disenchanted with increasing rents and seeking a simpler life they bought a 41' Islander Freeport to call home. It almost worked, "We may have less stuff now but with the hours spent working on the boat, it is far from simple," Calla says.

Dan's wife, Irene overheard Calla wishing for better electrical capacity on board, specifically a 50-amp system. She mentioned Dan's recent rewiring projects and his passion for helping people stay safe on their boats. Calla could hardly believe it, she contacted Dan and they began working on the project shortly after.



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After hearing friends sing Dan's praises, I met with him on a stormy night; the dock's holiday lights guiding me down to the boat. Dan is a storyteller. He remembers wires, boats, owners, and of course, technical disasters. Each story involves a project or client, culminating in the experience he now shares.

Dan's boating experience began at age seven on Long Island, sailing with his sister on their family's home built Blue Jay sailboat. Dan gained experience as a marine mechanic and studied industrial electricity, eventually adding other systems to his repertoire. His career began at age 15, working at his father's newly purchased marina. Towards the end of his professional career, Dan completed a wiring project on Bill Gates' 96' floating helicopter landing pad.

As an independent contractor, Dan worked on every imaginable boat from commercial fishing vessels, pleasure crafts, and luxurious yachts. Dan strove not just to be reputable among his customers, but also within his industry. His high standard of work and meticulous attention to detail can be seen on boats throughout the Northwest, so much so that certain marine electricians and surveyors recognize his work by sight.

In 1981, when Dan first moved to Seattle he worked at a boat yard focused on refurbishing boats from the East Coast for sale in the Pacific Northwest. Boats would be disassembled with their flying bridges taken off and stowed in the cockpits so they could fit under the bridges. Dan described the resulting wiring as "spaghetti that nobody's labeled." He decided to come up with a solution.

Dan developed a system that made sense to him and is consistent. He has utilized his technique both as a professional and now, as a mentor.

When someone unknowingly plugs in a heater and overloads the system, that is Dan's first teaching opportunity. He reaches for his digital point and shoot thermometer. Pointing the tool at the grill of the heater it registers a few hundred degrees. Pointing it at the plug it shows 135 degrees. The warm outlet indicates resistance and not

where resistance should be.

"Electrical resistance makes heat." Dan explains. Heaters work because all the resistance is concentrated in the grill of the heater and nowhere else along the way. The heat in the outlet indicates the boat is overloaded and somewhere there is a bad connection.

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Electrical systems can be foreign and intimidating, a lot like boating. Dan starts his explanation in broader terms, "Electricity in some respects is like water flow, and the bigger the pipe, or wire, the easier it is for the water (or electricity) to flow through."

Step-by-step, Dan guides a lucky boat owner through, explaining and teaching the "what" and "why" of an onboard electrical system. He waits for an "ah ha!" moment, then presents another step.

"When you start putting a kink in the pipe or any resistance in the wire that flow slows down and in electricity it starts making heat right there."

Dan doesn't just promote one kind of electrical system. It all depends on how the boat is going to be used. With clients Dan asked a lot of questions about how they use their boat. The ideal system for a liveaboard might not match that of a summer cruiser.

In addition to improving the physical system, better electrical usage involves changing onboard behavior, especially for those relocating from shore. On shore, overloading only impacts the circuit breaker. On the boat it overloads the whole system. Boat owners should always be mindful about how much power they are using.

"Dan has always described himself as a friend of the boat" Irene says. Dan designs and builds systems attuned to the conditions in which the boat will be used. He works with the owner to make the boat functional and safe while ensuring the boat is prepared to meet the anticipated demands.

In teaching and instructing people Dan is pretty strict with how it has to be done. He's here to share his experience, build an electrical foundation that meets your needs and doesn't recommend those unsafe shortcuts.

Dan could keep his knowledge to himself. He could charge for his

mentorship or only tell neighbors what to do but not why. He doesn't see why he would though, "I have always tried to teach rather than keep it a mystery," Dan says, "Because a mystery doesn't do anybody any good."

Dan is not the only one eager to share his knowledge and expertise. He has experienced it himself, "There is a similar attitude, I am sure, on other docks, but it's definitely on this dock and it really makes the community strong."

Irene is incredibly proud of Dan's efforts and the impact it has had on

their community. It's a community Dan and Irene describe as eager to help one another, each boat owner sharing their strengths. For Dan, his strength just happens to be making a boat livable, comfortable, and above all, safe.

Cara Kuhlman is a Seattle-based writer and sailor who is always eager to share a good story, especially over a beer. After growing up in the San Francisco Bay area she migrated north first to the University of Oregon, then to Seattle and sailed all along the way. She wrote most of this article on a boat with no heat... yet.

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