



A Silent Future?

SILENT-YACHTS ENVISIONS A WORLD OF MOTORYACHTS POWERED ALMOST ENTIRELY BY THE RAYS OF THE SUN. BY GARY REICH







The sailing background of Silent-Yachts founders Michael and Heike Köhler (left) is evident in an optional kite that can add 3 knots of propulsion to the Silent 60.

Despite the way they are often marketed, electric boats are not a new technology. They've been in use as far back as 1839, when Russian electric-motor wizard Moritz von Jacobi, with financial backing from Czar Nicholas I, built a 28-foot paddleboat powered by batteries. It could carry 14 passengers and boasted a top speed of 3 mph with an electric motor of Jacobi's design, according to the University of Tartu Museum in Estonia.

Since then, boatbuilders have been trying to figure out use-cases for boats that best suit electrification. A panel of marine industry experts from Brunswick Corp., Yamaha Marine, Torqeedo and Ingenity recently sat down at the American Boating Congress in Washington, D.C., to discuss the state of the electrification push in recreational boats, charging infrastructure as well as the challenges and opportunities presented by electric boat propulsion systems.

The main takeaway: Most panelists agree that energy densities in lithium-ion-style batteries are not yet ready to support what the marine industry typically calls all-day, wide-open-throttle use. In other words, don't expect to see large center consoles shedding their 4-stroke outboards for electric propulsion anytime soon.

That said, there are some electric boats with serious speed joining the market, such as those made by Candela, Eelex and others. Unfortunately, running those boats at speed significantly reduces range.

Most participants on the panel agreed that the 5- to 7-knot cruise use-case is currently the most suitable for boats. But owners still must plug in. And many panelists said that at marinas, an actual charging infrastructure is still not yet fully developed.

So, it seemed serendipitous when I received an email from Silent-Yachts to sea trial its new Silent 60 in Ft. Lauderdale. The boat is a transoceanic-capable power cat with dual elec-



Simple, elegant, functional and durable are hallmarks of the Silent 60's interior. One cruise guest likened the aesthetic to that of an Apple Store.

tric motors and a battery bank that gets most of its juice from the sun. The boat has a virtually unlimited range cruising at 6 to 7 knots in ideal charging conditions.

Silent-Yachts is the brainchild of bluewater cruisers Michael and Heike Köhler, who have sailed and cruised more than 6,000 days and 75,000 nautical miles around the world. The company began with a simple idea: to take advantage of the most reliable source of energy available at most of the world's cruising areas, the sun.

"We are actually sailors at heart," Michael Köhler says in a promotional video. "I bought my first sailing boat at 18 years old, and we've been sailing the globe for the past 40 years."

The couple didn't like being dependent only on the wind in a sailboat, nor solely on fossil fuel in a powerboat—the latter, especially, because it's not eco-friendly. They also thought about how, where most people cruise, the sun is more reliable than wind.

"In 2009, we started on the construction of our Solar Wave 46," Heike Köhler says. "It was the first prototype of an oceangoing yacht which used solar energy."

"Not only for propulsion, but also to provide energy to all household appliances and devices on board, such as the stove, freezer, air

conditioning, washing machine and the watermaker," adds Michael.

A year later, in 2010, the couple began a four-year sea trial on the prototype Solar Wave 46. They traversed Europe by river and cruised across the Black, Aegean and Mediterranean seas. Michael says that during those four years, the solar-electric drivetrain worked flawlessly, and not just in sunny conditions. They encountered snow, rain, ice, cloudy skies and Force 9 storms.

"The diesel generator on board was not used at all in the first three years," Michael says. "During the last year, we only used the generator for 30 minutes per week so the engine wouldn't become rusty and break down."

That was all the proof they needed that solar power was the way forward. In 2016, the company launched its first solar-powered production yacht, the Silent 64.

"Our client actually made a big statement with his personal Silent 64," Michael adds. "He crossed the Atlantic Ocean in 2018 as the first solar-powered production yacht to ever do so."

Today, Silent-Yachts has boatbuilding operations in Italy, Thailand and Turkey, with a total book of 55 finished and unfinished models from 60 to 120 feet, according to Philip Bell, Silent-Yachts' director of

North American sales.

The Silent 60 that I boarded in Ft. Lauderdale was the third hull to be launched. Its owners were scheduled to take delivery soon, then run her up the Intracoastal Waterway, according to the captain, Kyle Miller. They also have plans to cruise America's Great Loop.

There's no mistaking that the Silent 60 is a high-end product. She has sleek, contemporary lines; a precisely executed fit and finish; and a light interior with seating, fixtures and fittings made from top-quality materials. Inside lies a four-stateroom, four-head layout. The design elements feel minimalistic, yet elegant. A couple of folks on the cruise likened the look to an Apple retail store. There's a price to match the luxury: The Silent 60 starts at \$3 million in its base configuration.

The platform is spacious, measuring 59 feet overall with nearly 30 feet of beam. It felt as if Miller would have one heck of a time getting her out into the relatively narrow canal where she was berthed side-to-side on a bulkhead, but he made easy work of it, using the bow thrusters and twin electric motors to move it with a slick, sideways maneuver.

Thanks to her electrification, the most notable sound to our ears as the boat began to move is not the clatter of diesel, but the whoosh and hum coming through vents on both sides of the cockpit. "There is some mechanical space and engine room ventilation running, and the below-decks air-conditioning units are churning at the moment," Bell says. "Once we get some air moving through the cabin, we'll shut those down."

Hull No. 3 is the first "front entry" Silent 60 has built. She features a door forward in the main salon that leads to bow seating—both conventionally upholstered seats and two mesh-bottom pods. The forward entry may not seem like a big deal, but once the air conditioner units are shut off and the forward door is opened, our forward motion of about 7 knots generates a brisk breeze inside and the cabin remains comfortable despite the 95-degree Florida heat. The only noises are the gentle gurgling of the propellers and the sound of water rushing past the hull—which is silent enough for most guests on board.

The batteries are located under two hatches in the salon. Access to each motor is behind the transom steps at the aft end of each hull. Wiring and installation of all the supporting tech is neat, clean and well-secured and three power packages are available. They revolve around battery bank capacity, and electric motor and generator output. The midrange model has twin 250-kilowatt electric motors and a lithium-ion battery pack with a capacity of 225 kilowatt hours. Silent-Yachts also installs a backup generator on every yacht; our sea trial boat holds a 150-kW Volvo Penta diesel genset.

Silent's lower-range Cruiser model features two 50-kW motors, a 143-KWh battery bank and a 100-kW generator. The top-end configuration includes two 340-kW motors, a 286-kWh battery bank and a 145-kW generator.

I ask Michael about the sustainability of carrying as much as 500 gallons of diesel fuel on board for a backup generator, and why one is



even necessary. “All of our boats have a backup generator, mainly for safety reasons,” he says. “I never want the client to be in the situation where there are three days of bad weather and [they] want or need to move the boat, and [there is] no power in the batteries.”

To capture the sun, the Silent 60’s array of solar panels lines the forward and aft cabin tops, and the flybridge hardtop. The panels produce up to 17 kWp (kilowatt peak output) in bright sunshine. That equates to 17 kW of charging per hour, in ideal conditions.

At the helm, Miller pilots the Silent 60 along the ICW at 5.4 knots, drawing a combined 8 kW from the battery bank. A small but easy-to-read display shows power draw and charging in one convenient grouping. Miller bumps the throttle up to just under 7 knots, which increases energy draw from the bank to 14 kW. That means 3 kW is still flowing into the battery bank from the solar array.

“If you start out with a completely dead battery bank, which isn’t generally a situation owners will encounter, it takes four bright days to charge it back up again,” Miller says. “Most folks are going to run the generator occasionally, especially when running air conditioning in hot weather. But we’ve found people rarely have to use the air conditioning since the boat is ventilated so well. You can also charge the batteries via shore power if you tie up.”

This Silent-Yachts 60 with midrange power has a top-end speed of 13 to 14 knots, though Miller says running the boat constantly at that speed “fights against the theme of the vessel.”

“You certainly need that speed to sometimes escape weather, or make it to the anchorage before dark, but the way we’re using this boat today—at 6 to 7 knots—is the way it’s most sustainable,” he says. “Running the generator all the time to run at 10 to 13 knots just doesn’t make sense. That’s not what this boat is about.”

When asked which technology will eventually increase speed and range, Michael says energy density in batteries is likely to kick off the next big increase. “Motor development is not to be expected anymore because they are about 97 percent efficient, which is not enough room left for improvement,” he says. “Solar panels are [showing] very slow improvement, very slow. We expect more to come, maybe in five, maybe 10 years, nobody knows.”

“Regarding the batteries, [that’s where] we can expect the biggest improvement in another two to five years,” he adds. “Hopefully, we will have a big step where they could reduce the weight and almost double the energy density. That’s what I look forward to.”

The Silent 60 also offers a kite-sail option that can be deployed to pull the big cat along at speeds as high as 3 knots, or simply reduce energy drawn underway. “It takes a bit of time to set up,” Miller says, “but once it’s deployed, its operation is totally automatic, flying in a figure-eight pattern.”

Approaching the end of our nearly hourlong cruise, the Silent 60 has consumed around 9 percent of its battery capacity traveling an average of 6 knots with a full load of fuel and water, and approximately a dozen people on board. Many compliment the quiet, soothing feel of the ride, and the luxury touches from stem to stern.

One guest comments that the only thing that really needs maintaining on board is the diesel generator, along with the normal systems and exterior components that would need maintenance on any other boat. The savings from requiring little to no diesel-engine maintenance could be significant. “The only downside I see is for people who want to fast cruise,” he says. “This is not their boat.”

Michael adds the company vets suppliers’ sustainability cultures and aims to use the most eco-friendly materials. “We try to do everything as sustainably as possible and try to exchange less-sustainable materials for more-sustainable ones throughout the boat,” he



The Silent 60’s engine room is highly accessible and beautifully designed—as is its energy consumption interface.

says. “If it’s in the galley for the walls, for the ceilings, the floors, the construction materials, we try to get more and more sustainable.”

At the end of the day, a \$3 million yacht isn’t something most people would consider sustainable, given the carbon footprint of assembling a vessel this size. “It’s a starting point,” says Silent-Yachts designer Juliana Miguel. “It opens the discussion for using solar-electric on a broader scale. That’s the sort of sustainability we’re talking about.” □