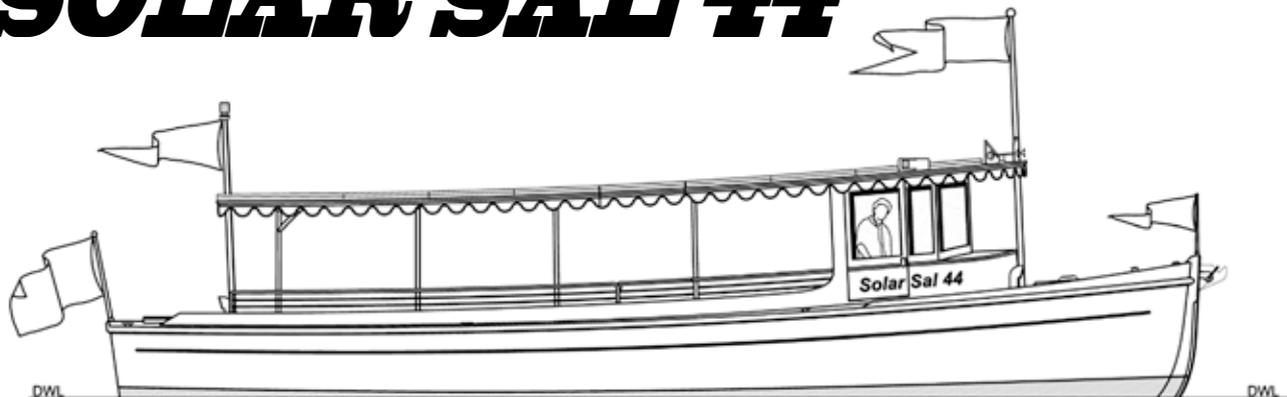


SOLAR SAL 44



Hudson River Maritime Museum's Riverport Wooden Boat School Announces Construction Of *Solar Sal 44*

Sustainable Energy Systems, Inc. and Gerr Marine Team with Museum to Design and Construct Zero-Fuel, One Hundred Percent, Solar-Electric Passenger Tour Boat.

The Hudson River Maritime Museum proudly announces the construction of the first commercial passenger vessel of this kind -- a practical, 100% solar-powered boat that carries no fuel and doesn't even plug into shore power -- the Solar Sal 44.

Clean, quiet, zero fuel-efficient, low-carbon/green construction -- Solar Sal 44 -- will provide seats for 31 passengers, plus room for a captain and one-to-two crew members.

Solar Sal 44, Patent Pending, is the first commercial "T" boat product for Sustainable Energy Systems, and was conceived by its President, David Borton, a Coast Guard certified Inland Master and Physics PhD. She is planned to launch in the Summer 2017.

David Borton -- from design concept to reality.

Borton, who grew up using and repairing wood-canvas canoes has been the President of Sustainable Energy

Systems, Inc. since 1992, and has taught solar engineering at Rensselaer Polytechnic Institute for 33 years.

Over the years, Borton has experimented with various fabrications with much success, leading to the six-year old Sol, a 25 foot launch used in the Adirondacks, and Solar Sal, a 39 foot multipurpose prototype for tourist, cargo and yacht versions of 100% solar electric boats. The Solar Sal 44 is based on this second design, which made Erie Canal History in 2015 by carrying an 8,000lb payload from Lockport to Mechanicville without using a single drop of fossil fuel (or a mule)! The trip was sponsored by Saratoga County manufacturers Cascades Paper and Hullspeed Coatings, and the Chamber of Southern Saratoga County.

Both boats (Sol and Solar Sal) are powered solely by their solar panels (with no shore-power charger), and both can run all day and well into the night at 5 to 6 knots. This entire concept is U.S. patent pending (PCT/US201/59967) by David Borton.

Dave Gerr -- master naval architect.

In mid-2016, Borton retained Gerr Marine, Inc. of New York City, to design the Solar Sal 44 based on his concept. Dave Gerr, a naval architect and a Chartered Engineer and Fellow of the Royal Institution of Naval Architects, designs both yachts and commercial vessels. Gerr probably works on a wider assortment of boat types than any other design office -- sail and power; yacht and commercial; monohull and multihull

From 2003 through 2014, Gerr served as director of the Westlawn Institute of Marine Technology, and in 2015,



became an adjunct professor at SUNY Maritime College, where he lectures on boat design. He has published over 400 articles on boats and boat design, and is the author of Propeller Handbook, The Elements of Boat Strength, The Nature of Boats, and Boat Mechanical Systems Handbook, all published by International Marine/McGraw-Hill.

Gerr Marine's projects and designs have ranged from 10-foot nesting canoes to luxury motor yachts to consulting on the Virginia Class (SSN 774) nuclear attack submarines; and designing: the aluminum Kanter 57; the fleet of unique ultra-shoal, beachable, tunnel-drive cruisers built by Covey Island Boatworks, (from 42 to 50 feet); and the magnificent 76-foot tunnel drive aluminum motor yacht Walrus, built at St. Augustine Marine.

Local Fabrication – Along the Historic Rondout Creek in Downtown Kingston at the Riverport Wooden Boat School in the Hudson River Maritime Museum

Bids for building the Solar Sal 44 were received in late 2016 by The Bortons, who live in Troy, NY. The winning bid went to the Hudson River Maritime Museum, which has a wonderful collection of artifacts and history of the Hudson River as well as its newly created Riverport Wooden Boat School.

Kingston is one end of the Delaware and Hudson Canal and has been a center of boatbuilding and transportation for centuries. Besides coal and general cargo Kingston produced and shipped cement for construction up and down the east coast.

The Erie Canal, starting at the Hudson's headwaters of navigation in Troy, connected Buffalo, the Great Lakes and the Midwest to a small port on Manhattan turning it into the shipping and financial center of the whole state. The story of the canal systems in New York, powered by mules and horses, is best learned traveling along the canals in solar powered boats.

The Boat School provides both educational opportunities for both youth and adults, along with professional wooden boatbuilding and restoration. The Hudson River sloop Clearwater; the Onrust, a replica of the Dutch Captain and explorer Adriaen Block's 1614 yacht – the first yacht and fur trading vessel built in the New World -- after Block's vessel, the Tyger burned in New York Bay; and the Beacon Sloop Club's Woody Guthrie have all wintered-over and undergone repair and maintenance at the boat school.

Behold – the Solar Sal 44

This new longer boat maximizes the potential of Borton's concept, with the large battery capacity and optimization of the solar-panel configuration. In addition, a live-aboard cabin-cruiser version of the Solar Sal 44—the Solar Sal Cruiser—will follow shortly. This will be the first cruising powerboat that won't require any fuel.

A Much Lower Carbon Footprint – As Green As Possible!

The Solar Sal 44 not only uses no fuel, but also has a wooden hull – of wood-epoxy/strip-plank construction sheathed with glass. This construction has maintenance and longevity characteristics equal to that of conventional fiberglass, meaning that 95% of the hull structure is from the renewable and low-carbon material – wood. Other boatbuilding materials such as fiberglass, aluminum, steel and even ferro-cement (a type of highly versatile, thin reinforced concrete with small diameter wire meshes throughout the cross section) have much higher carbon footprints.

Traditional Styling and Name to Fit Local History – 21st Century Technology meets 19th Century-Inspired Launch Design.

The celestial "soleil" or Sun provides the "solar" part of the launch. The name "Sal" refers back to the old Erie-Canal Song, written by Thomas S. Allen in 1905, heralding the faithful old mule "Sal" who was both a pal and a good worker.

During the late 19th Century, the internal combustion engines were heavy, low-powered and their hulls had to be very efficient. Launches of this type were often found in the waters of the Hudson River as well as the Mohawk, Champlain and Erie Canal system.

The Solar Sal 44's Arrangement

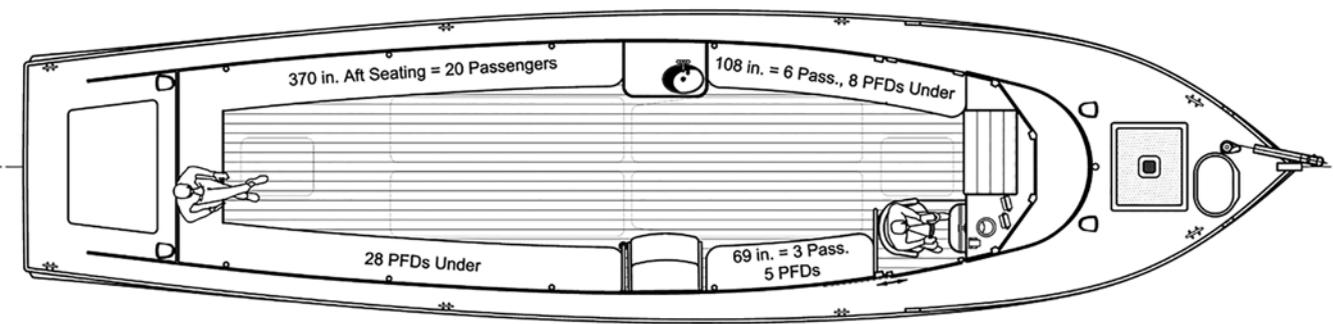
Boarding is from a ladder to starboard, with an optional wet bar to port. Forward, to starboard, is the helm station, and forward below is a fully private head compartment.

The twenty-eight 8-D batteries are all easily accessible directly below four large battery hatches. Twin 4-kW electric Torqeedo outboards are set in an enclosed outboard well aft, with a hatch over them to make them even quieter. In fact—like most electric boats—the Solar Sal 44 whispers across the water, making almost no sound and leaving almost no wake.

On top of the awning roof are sixteen SunPower solar panels. This provides a nearly horizontal and unobstructed surface to maximize exposure to the sun on the panels. Headroom under the awning roof is a minimum of 6-foot, 9-inches (206 cm).

The Solar Sal 44 is fitted with a 55-gallon (208 l) black-water tank to starboard and a 55-gallon (208 l) grey-water tank to port. Aft are a pair of fresh-water tanks, with a total capacity of 60-gallons. Multiple hatches ensure good access to the bilge, and to wiring and plumbing.

In bad weather, the fully open cockpit sides are closed with roll-down Eisenglass curtains. Combined with the forward cabin/windscreen, the entire cockpit is protected from the elements. In fair weather, the Eisenglass curtains roll up and most of the forward windscreen windows open for optimum airflow.



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Professor David Borton stands beside the Solar Sal hull prototype that completed the historic 2015 trip. Viewed at the docks at Brewerton, NY in October 2015, Solar Sal is carrying an 8000 lb payload, or the equivalent of 30 passengers plus gear. The trip was made exclusively under solar-electric power. *Photo courtesy of the Chamber of Southern Saratoga County*