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SILENT-YACHTS

A white yacht with a blue canopy is sailing on a deep blue sea. The yacht is moving from left to right, leaving a white wake behind it. In the background, there is a rocky coastline with green vegetation under a clear blue sky.

*A whole new  
Class of Yachts*



# Welcome to the evolution of yachting

A true world cruiser with unlimited range.

## What kind of sailor are you?

Ask yourself this one simple question: How much time do you actually spend sailing or to put it another way – how often are you waiting for wind, from the right direction to get you directly to your destination at a reasonable speed in comfort?

As most sailors will tell you that can be often and of course as sailors we are reluctant to admit it and hate to start that diesel. What then if there were a quiet, luxurious way to cruise, that minimises the use of fossil fuels, yet still supplies you with as much electricity onboard as you'd expect at home. That's where SILENT-YACHTS comes in – offering vessels just below the designated Super-yacht length of 24 metres, yet with all the amenities you'd expect of such a vessel. And it doesn't matter if that be sail or power – there's a solution for all.

## Cruising re-imagined!

SILENT-YACHTS brings to you the first and only oceangoing production yachts in the world that are self-sufficient and powered by solar energy. Since 2009 our yachts cruised more than 100.000 nautical miles purely powered by solar energy. They proved their reliability and seaworthiness all over the world and in all kinds of weather conditions - a Silent 64 even crossed the Atlantic Ocean! The modular and scalable SILENT System is simpler, has lower maintenance and costs less than any conventional fuel-depending propulsion and energy-supply appliance. At the same time it grants more luxury, comfort, independence, reliability and safety. Do you want to go for solar-electric propulsion? Are you the owner of a yacht who wants to sleep without the noise and the vibrations of continually running generators?

**SILENT-YACHTS has the solution for you.**

Imagine starting every morning with an inspiring sunrise and ending daylight with an equally breathtaking sunset! Watch, smell, feel the ocean all the while knowing that you are being environmentally responsible.

SILENT-YACHTS offers you three models that can be configured according to the wishes and needs of the future owner.



SILENT 55



SILENT 64



SILENT 80

## Solar power meets luxury yachting.

### SILENT-YACHTS FACTS

- SILENT-YACHTS was honored multiple awards as one of the Top Power Multihulls in the industry by organizations like Energy Globe Award, Global Warming Foundation, I-NOVO Award and Multihull of the Year Award.
- A SILENT yacht accomplished the first ocean crossing of a production motorboat with solar-electric drivetrain.
- On a SILENT yacht solar power is used for propulsion as well as for providing energy for all household appliances as well as air-conditioning, heating etc.





# SILENT 55

SILENT 55 is the most compact and at the same time the most versatile SILENT-YACHTS model regarding cabin configuration (3–6 cabins, up to 12 persons) and propulsion options.

*She can easily be handled by two persons so she's ideal for family cruising without crew, circumnavigation or in the charter market (bareboat and crewed). In commercial configurations the SILENT 55 is perfect for excursions, diving charter, VIP shuttle etc. This compact but luxurious catamaran can also carry a dinghy, several bikes and a motorbike.*



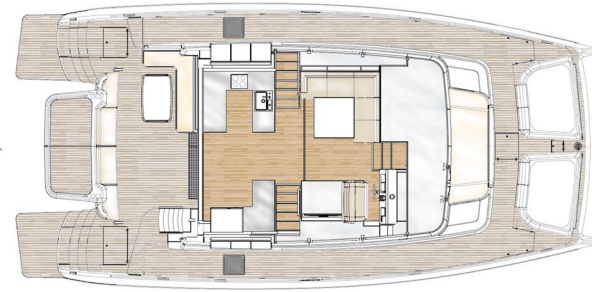
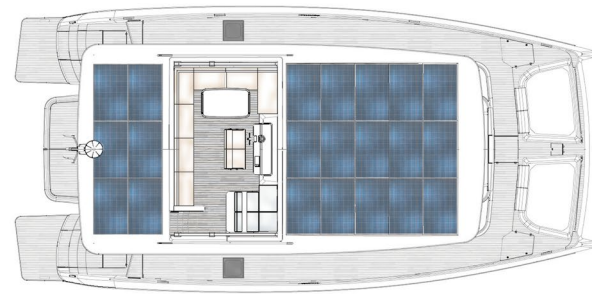
The only footprints you leave behind are those in the sand.



# SILENT 55

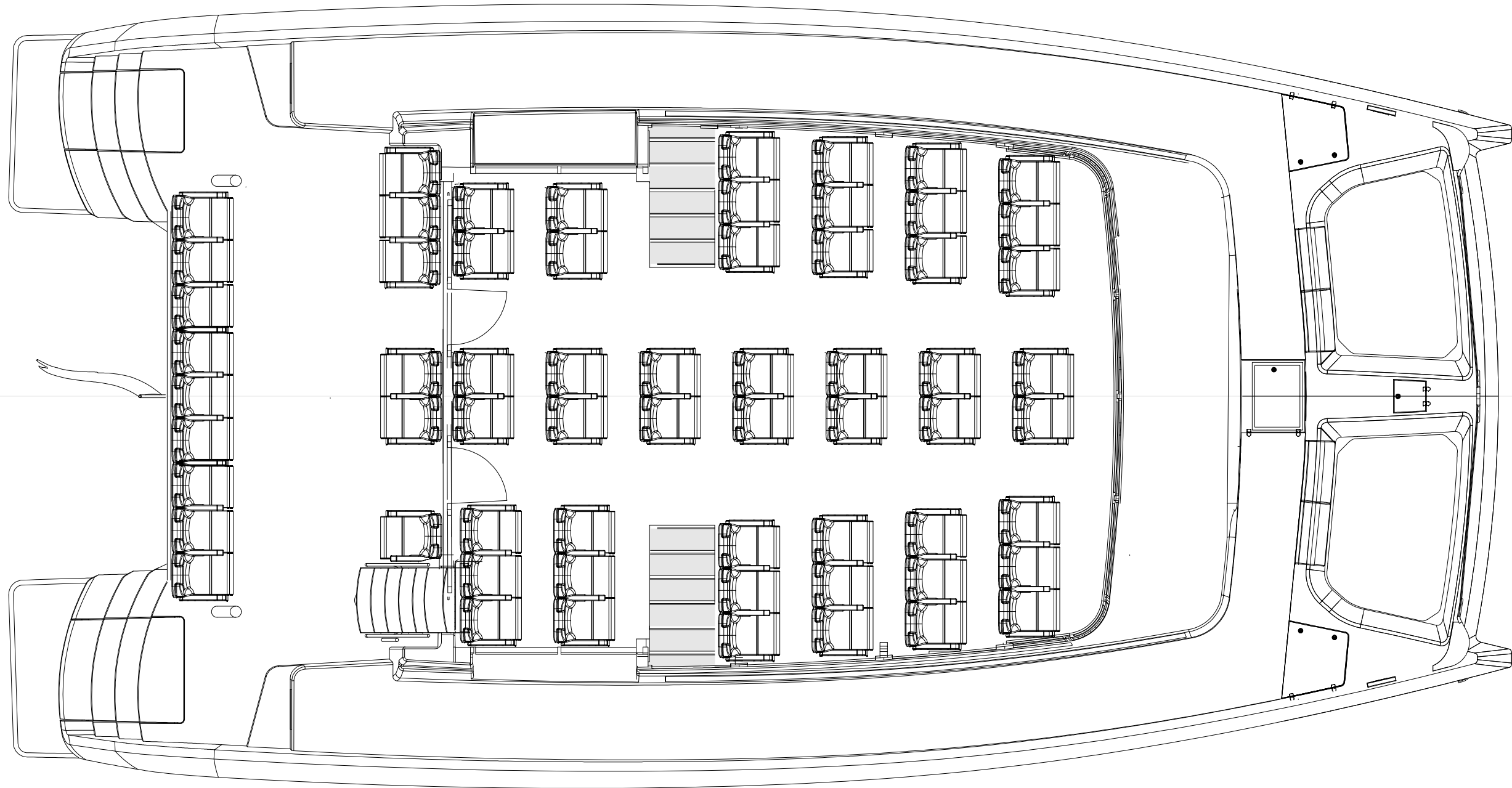
## SPECIFICATIONS

LENGTH OVERALL	16,70 m (54.8')
BEAM OVERALL	8,46 (27.7')
DRAFT	1,20 m (3.9')
LIGHT DISPL. (EC)	19 tons
WATER	500 – 1.000 L
WASTE-WATER	2 x 500 L
FUEL	500 – 1.600
SOLAR PANELS	10 kWp
E-MOTORS	2 x 30 kW / 2 x 250 kW
GENERATOR	22 kW / 100 kW
BATTERY CAPACITY	120 kWh
CRUISING SPEED	6 – 8 kt / 12 – 15 kt
TOP SPEED	approx. 12 kt / 20 kt
CERTIFIKATION	CE-A
RANGE	Trans-Ocean






# FERRY CONCEPT - SILENT YACHT 55



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Index	Date	Initials	Revision notes	FERRY CONCEPT		
				- WORKSHOP DESIGN -		
				Category of Design	X	
MANUFACTURER				Technical Data		
				Length over all	X	[m]
				Length at WL	X	[m]
				Beam	X	[m]
				Draft	X	[m]
			Engine	X	[kW]	
				Drawing	No.	
				SUNWAVE 55 FERRY	X	
Scale X		Format A3	Date X			



# SILENT-YACHTS

## Options for Propulsion

SILENT-YACHTS offers the following drivetrains and means of propulsion:

### – "Cruiser"

Motorized for a top speed of 10–12 knots and a cruising speed of 6–8 knots. For long term economic cruising.

### – "E-Power"

Offering all features of the "Cruiser" plus the ability to go up to 20 knots solely electrically powered for a limited period of time. The vessel comes with high power e-motors, more powerful generator and higher capacity battery bank and is the perfect solution for short term higher top speed in combination with very economic solar-powered cruising.

### – "Hybrid Power"

With the "Hybrid Power" version, a pair of powerful diesel engines together with the electric motors achieve top speeds of about 20 knots. This version is designed for long term fast cruising while using the diesel engines and for slow cruising <6 kts with 2 electric motors.

### – "Sailor"






On the SILENT 55 all three drivetrain options (Cruiser, E-Power and Hybrid) can be combined with a sail / rig. In fair winds, while you are using the sails the batteries are recharged by recuperation. If the wind stops or if you want to go against head-wind, you can continue noiseless traveling by switching to the electric propulsion.

### – "Kite Sail"

The "Kite Sail" version features a towing kite with full automatic control. SILENT yachts as well as the Kite Sail Yacht Kite System are adapted to complement each other perfectly, offering noiseless cruising and unlimited range without any emissions. Conventional sails require a lot of space on the deck as well as maintenance and create shade on the solar panels.

The Kite Sail kite flies in altitudes between 100 and 150m where the winds are much stronger, so the kite generates up to 20 times more power per square meter compared to a conventional sail.

The sound of the waves is like music in your ears and there is nothing disturbing this feeling.

SILENT-YACHTS MODEL	SILENT 55	SILENT 64	SILENT 80
Propulsion Option			
CRUISER 	2 x 30 kW Turnable Electric Motors	2 x 30 kW Turnable Electric Motors	2 x 80 kW Electric Motors
E-POWER 	2 x 250 kW Electric Motors	2 x 250 kW Electric Motors	2 x 250 kW Electric Motors
HYBRID-POWER 	2 x 220 HP Diesel + 2 x 14 kW Electric Motors	2 x 220 HP Diesel + 2 x 14 kW Electric Motors	2 x 220 HP Diesel + 2 x 14 kW Electric Motors
SAILOR 	Sailing Rig	–	–
KITE SAIL 	Kite – the up-to-date way of sailing	Kite – the up-to-date way of sailing	Kite – the up-to-date way of sailing

# SILENT-YACHTS

## Technology A-Z

**A SILENT YACHT** can cruise up to 100 nautical miles a day without fuel, permanently and for weeks featuring virtually unlimited range. The sun in cooperation with the SILENT-System feeds the electric propulsion of the catamarans and all house-hold energy needs. What is the technology behind this?

**BATTERIES:** The energy is stored in state-of-the-art light weight Lithium batteries. They provide ample energy for the propulsion as well as for all household appliances, e.g. for television, air-conditioning, ice-machine, water-maker, laptop etc. We are using batteries which are among the best regarding liability, safety, performance, weight and life-span.

**EFFICIENCY:** Combustion engines have an energy efficiency of about 30 % whereas electric motors have an efficiency of more than 90 %. This saves a lot of power and emits significantly less heat. For the same reason we use an induction cooktop and an electric stove in the kitchen. No propane, no gas on board, no fire hazard and less heat inside the boat.

**LUXURY** depends on permanently available energy. On a SILENT yacht you can watch TV, have a cold beer, run air-conditioning and produce up to 2000 liters of drinking water per day without starting the generator. In bad weather or when mosquitoes are outside, you can enjoy the unique aeration system. The air conditioning fast and efficiently cools down the interior of the boat (or heats it in cold weather).

**MAINTENANCE:** There is no maintenance required for solar panels and batteries. The electric motors need two new bearings after 50.000 hours, at 500 hours per year this means 100 years (!). Only the small generator needs a little attention.

**RANGE EXTENDER:** In longer periods of bad weather or when a higher speed is required for more than a couple of hours a diesel generator recharges the batteries. This gives you the confidence that you will never run out of power.

**RECUPERATION:** We offer new concepts to use the wind in a more modern way, with a kite, a customized Parasailor and wind generators. While sailing your SILENT yacht recharges the batteries. When the propellers are turned by the water-flow, the electric motors produce energy to recharge the batteries.

**RELIABILITY:** The guaranteed lifespan of our solar-panels is 25 years, the lifespan of the Lithium batteries 8 years, the electric motors are virtually free of maintenance for decades. In fact an electric propulsion system is by far more reliable than conventional diesel powered propulsion, as there are less moving parts, no lubrication is required and it is free of fuel based problems.

**SAFETY:** At SILENT-YACHTS we are proud, that our catamarans were the first to be certified according to DIN EN ISO 16315 for marine operation of electrically powered yachts. All vital components are redundant to ensure double safety.

**SOLAR PANELS:** The photovoltaic modules we use are of highest quality and efficiency – the best available on the market.

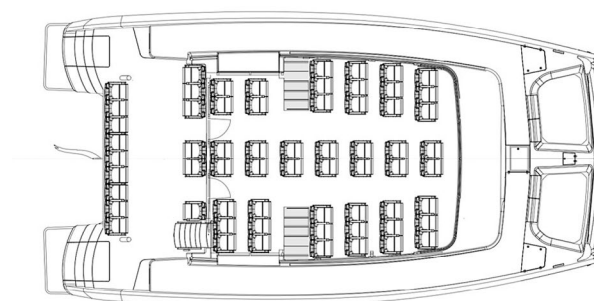
**SPEED:** Due to their exceptionally low weight (half the weight of a conventional yacht), the streamlined shape and the towing-tank optimized underwater-lines, SILENT yachts have less wave drag and friction than other sailing- or motor-yachts. This reduction is due to weight-optimized design, expensive materials (Carbon, Aramid, Epoxy-resin) as well as elaborate construction techniques. Depending on the chosen motor configuration, a SILENT yacht offers a cruising-speed of 6–8 knots and a top speed of up to 20 knots.

# SILENT COMMERCIAL LINE

The catamaran is based on the same platform as the SILENT 55 Yachts and available with the same choice of drivetrains.

The following layouts can be customized on request:

- Open bridge-deck daytime excursions: 2–4 washrooms and storage for food and beverages instead of the the cabins, no salon-windows, no flybridge, perfect for diving excursions, wildlife watching, barbecue and sunset cruising
- Luxury day time excursions/VIP shuttle: Comfortable saloon layout, small conference room and restrooms instead of the cabins, outside appearance similar to the Yacht-Versions with salon-windows and flybridge
- Passenger transport for up to 50 passengers: Arrangement with 50 stools and restrooms instead of the cabins
- The interior can be customized to the needs, the purpose and the operational area of the ship.



SILENT 55 | Passenger Ferry | Up to 50 persons

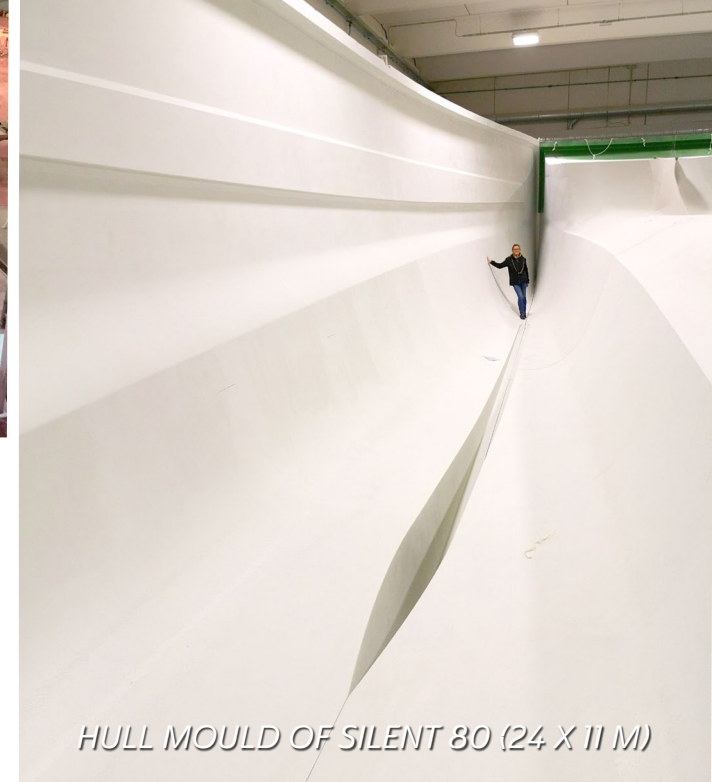




FULL CARBON DECK OF SILENT 64



FULL CARBON HULLS OF SILENT 64



HULL MOULD OF SILENT 80 (24 X 11 M)



LITHIUM BATTERY PACK



250 KW E-MOTOR

# History

## A new class of yachting (is on the rise) ...



After 23 years using motorboats and sailboats on several oceans, Michael and Heike Köhler were sure that there must be a better way for the energy supply and propulsion of yachts. From 2005 to 2009 they tested alternative power sources on their own sailing catamaran, with a focus on self-sufficient solar power supply as well as electric propulsion. From 2005 Heike and Michael gave lectures about these topics and published a book called "Energieversorgung auf Yachten" ("Energy-Supply on Yachts"). Based on the results of five years and 15,000 NM of sailing on a test catamaran they started the design and construction of the SOLARWAVE 46, a purely solar-powered yacht, the first fully self-sufficient bluewater-catamaran.

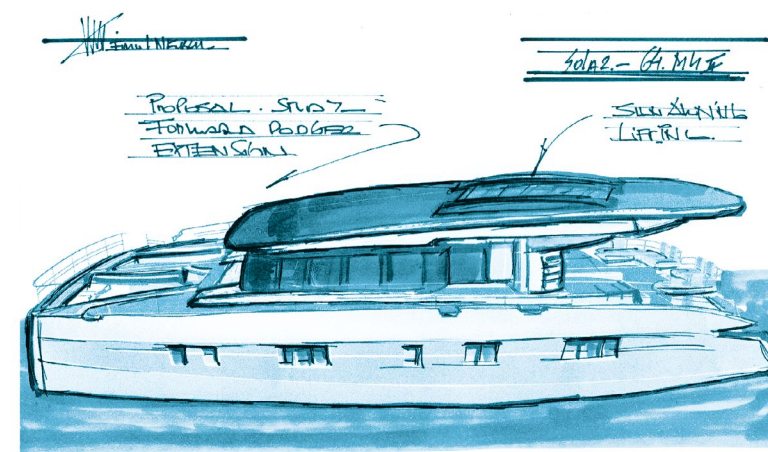
The SOLARWAVE 46 was the first oceangoing yacht that powered the propulsion as well as all household appliances exclusively by solar energy. This includes induction cooktops, stove, microwave, grill, freezers and fridges, air conditioning, washing machine, and water-maker. Even the dinghy motor and the electric motorbike were solar-charged. In 2010 Heike and Michael started a rigorous 4 years sea-trial, crossed the whole of Europe by river and sailed the dangerous Black-Sea, the stormy Aegean as well as the Mediterranean Sea. In addition to the two skippers the solar catamaran accommodated 6-8 persons with electrically prepared full board, water-production, cooling and heating for a period 120 weeks in total.

And on top of that the SOLARWAVE 46 was able to power the engines, every day under any weather-conditions, in storms of force 9 as well as in calm weather, with sun, rain, cloudy sky, snowfall and ice. During this period of 4 years there was no need for maintenance or repair-works, neither for the solar-plant nor the batteries or the electric engine.

The generator, which has to be on board for safety reasons, was working for approx. 50 hours – primarily to avoid becoming rusty. During the same period of time the electric motors worked more than 2.000 hours – without any maintenance.

This was the proof, that the SILENT-YACHTS technology is head and shoulders above all other types of nautical propulsion. And that Michael Köhler's SILENT System is suitable for self-sufficient sailing and life on board.

During the last years, Heike and Michael Köhler have received several awards honoring their R&D about alternative energy production and consumption on boats and their success to implement the results into real life luxury yachts. Today they produce high-end yachts in different sizes and layouts that use the SILENT System to provide and manage the solar energy needed for propulsion, household and luxury life on board.



## ... A true world cruiser with unlimited range.

# SILENT-YACHTS

## Innovation

**1 | EFFICIENCY AND WEIGHT:** The underwater lines are optimized by CFD and towing-tank tests. The impressive weight reduction is a result of the bionic design and the use of carbon fibers and high quality resins. The interior furniture is made of stiff and ultra-light honeycomb composite plates with laminated real wood-veneer. Furniture and tanks are structurally integrated into the hull.

This reduces weight significantly to about half the weight of a conventionally constructed and powered yacht of same size and comfort. Each kg / pound less is equivalent to less wave drag and friction and therefore less energy required to move the boat. This unique efficiency makes them fast and enables self-sufficient propulsion.

Salon and cabins are enwrapped in thermal insulation, all windows are shaded by the roof or the hull. This reduces the heat up of the interior and thus the energy required to keep the interior at a comfortable temperature-level.

**2 | AUTONOMY AND LUXURY:** SILENT Yachts are true world cruisers with virtually unlimited range, even when the sun is not shining. In case of longer periods of bad weather the Range Extender starts automatically to recharge the Lithium batteries when they are low. Their huge capacity provides ample energy for the propulsion as well as the household appliances. 230 VAC (110 VAC) day and night (24/7!) for television, air-conditioning, ice-machine, watermaker, laptop and much more without running the generator. No need to search for a marina to charge the batteries, get ice, refuel or to fill your water tanks.

**3 | RELIABILITY:** 25 year warranty on the solar panels and 8 year warranty on the batteries. After 50,000 hours, the motors need 2 new bearings. All technical components are of high industrial quality, engineered / built in Europe or the USA. The batteries and electric motors are inside the boat in a dry and safe place. All wiring is tin covered and all plugs are specially designed so water and humidity cannot enter. All parts exposed to the marine environment are made of corrosion resistant materials. All components are virtually free of maintenance so the running costs are much lower than on a conventionally powered catamaran.

**4 | REDUNDANCY AND SAFETY:** All vital components are redundant to ensure double safety. Due to the configuration of the components, an overload situation is not possible at all. The SILENT system is by far safer than conventional propulsion systems.





SILENT-YACHTS

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