Text: Ludovic Roussille - Photos: By the Author and Emmanuel van Deth

Test location: **La Grande-Motte, South of France**
Conditions: **Southeasterly wind 5 to 10 knots, moderate sea state**

The sleekness of the hulls and the E-40's featherweight design allow it to reach 18 knots with just two 50-kW motors; the exceptional efficiency of this hybrid propulsion system is evident in its almost imperceptible wake.

E-40 POWERCAT

A Lightweight, High-performance Electric Catamaran

Although the E-40 was among the smallest multihulls on display at this year's International Multihull Show, that did nothing to diminish the appeal of this electric powercat, which is quite unlike any other. With its slender hulls, inverted bows, wide deck platform, discreet coachroof and electric propulsion, the Earthling unapologetically breaks the mold of recreational boating - and that of twin-hulled motorboats in particular - and for us, that's no bad thing...

From the dock, the Earthling E-40's lines evoke those of a sailing catamaran: It would be easy to imagine it featuring a carbon rig and fancy tillers… but it definitely hasn't got a mast. This is indeed a powercat that cheerfully breaks free from the marketing hype that still reigns supreme in the world of powercats. On the E-40, there's no flybridge carrying a T-top, and no promise of easily exceeding 20 knots by revving two powerful diesels in the engine compartments. But it's clear that the project leader, John McGettigan, has a genuine passion for sailing and performance: A New Zealand engineer, John has, among other things, worked on the America's Cup, and this is by no means his first foray into multihull design: as early as 2000, he launched a large 58-foot (17.6-meter) sailing catamaran already named Earthling - a design by Greg Young. That project already demonstrated his interest in innovative technical solutions and energy efficiency.

"You sail without sails"

But if the E-40 reminds us of a sailboat without a mast, it's for good reason: it promises to deliver the same sensations as a sailboat. John sums up the concept in these words: "*You sail without sails*." And this was actually the goal he set for his own benefit, and one he believes addresses

a growing sector of the market. "*I've done a lot of sailing, and today I want to keep that spirit alive - by being able to sail quietly and to sail far, but without the all constraints of actual sailing.*" So, it was only natural that John, having become a specialist in hybrid propulsion, designed a simple, functional multihull equipped with proven technologies that allow for peaceful boating in total silence. To cover long distances, one must adhere to a strict design and set of specifications, with the power-to-weight ratio as the central factor. The E-40 is based on the Stealth 36, a sailing catamaran designed by Australian Alan Carwardine and built in Phuket, Thailand, at Asia Catamarans, though John has, of course, made numerous modifications. In fact, it is at this very shipyard that the Earthling's hulls (construction in foam sandwich with carbon fiber reinforcements) are built, before being shipped to Europe for assembly of all the motor, power generation, and electricity storage components.

A Simple and Functional Open Space

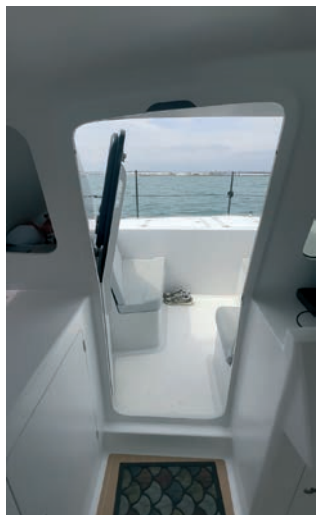
You step aboard via a long, unobstructed sugarscoop that extends beyond the hull to allow for easy access from the side. One step up and you're into a very open, flush-decked space. Once the aft door is opened (it slides up into the roof), the saloon and cockpit merge into a beautiful open space measuring 18½ feet (5.6 m) long by almost 14 feet (4.2 m) wide, for indoor/outdoor living. As you take in this sleek, functional space - enhanced by various carbon features - it's clear how much emphasis has been placed on weight reduction without sacrificing basic comfort. The saloon incorporates a beautiful, fully equipped galley, a pleasant dining area on the starboard side, and a convertible sofa to port - an attribute that Petra, John's wife, particularly appreciates for nights at anchor, allowing her to be as close as possible to the outdoors. A small but pleasant forward cockpit is cleverly offset to port so as to increase the living space in the starboard hull, where there is a beautiful cabin with a queen-size bed, separate shower and head. On the port side, there is a single berth plus the same amenities, all with generous headroom ranging from 6 feet (1.82 m) in the cabin to 6'6" (1.97 m) in the shower. A version with two double cabins is also available, though this comes at the expense of the forward

This powercat embraces its sailing catamaran design… just without a mast.

The long sugarscoops, great for swimming or getting in the dinghy, are also very practical alongside for stepping aboard, even from the side thanks to the cut-out sections. The bridgedeck clearance is high enough to allow easy passage through the water.

From the dock, you can already see the sleekness of the bows, shaped like knife blades…

On the current version, the coachroof is equipped with 2 kWp of solar panels, but upcoming modifications will double this charging capacity.



The foredeck is divided into three functional areas: forward cockpit, sun-lounging area, chain locker, and storage lockers. On deck, you'll enjoy wide, unobstructed side-decks. In calm seas, the open door leading to the forward cockpit brings plenty of fresh air into the cabin.

cockpit space, which is reduced. Note that only the forward half of the hulls is dedicated to living spaces: the after sections house all the motor and power generation systems. These components are, however, arranged as closely as possible to the center of the hulls to optimize weight distribution.

The Joy of Gliding Along in Absolute Silence

It was time to cast off, and as we slipped the mooring lines, the Earthling E-40 began to glide silently through the harbor under the curious gaze of fellow boaters, among whom we could sense a hint of envy - they'd have loved to join us. A thousand feet (300 meters) past the harbor entrance, a light press on the throttle and the catamaran was immediately up on the plane, leaving the stern wave more than three feet (1 m) behind us. The most surprising thing is the acceleration: it's smooth as it is silent. Here, it's not the wave that's pushing us, but you still get the feeling of being on a surfboard and having really nailed your take-off! This very pleasant sensation is a testament to John's work on the hull. As we've said, the similarities with the Stealth 36 are clear, but it's very clear that some design parameters have indeed been adapted. Starting with the waterline length, which has increased by nearly 3 feet (1 m) thanks to the extended sugarscoops, allowing for better distribution of the powercat's load. As for the underwater hull, there's been a reduction in rocker to more closely resemble a surfboard than an Archimedean hull. Less drag, more range… This touches on a critical point for a hybrid powercat. Finally, skegs have been added to provide good course-keeping while also protecting the propellers when taking the ground. All these adaptations are subtle and make perfect sense.

For optimal performance, the catamaran is equipped with a pair of 600-mm -diameter (23.6 inch) propellers that deliver high thrust at low RPM without any cavitation. For example, to reach a speed of 9 knots, the propellers rotate at just 720 revolutions per minute without any noticeable wake, which clearly

At the after end of the roof, two small pipes channel rainwater directly into the tanks.

With the aft door open, you can enjoy nearly 270 square feet (25 m²) of flush-decked space.

adds to the magic of boating! The thrust from the two 50-kW motors is truly spectacular: when heading downwind, the Earthling E-40 takes advantage of every wave to extend its stride, and on all points of sail (yes, we're going to talk about points of sail, just like on a sailboat…), its course-keeping is impeccable. When heading upwind, there's nothing to complain about either. The catamaran cuts through the waves with ease, and the rigid foredeck is high enough to avoid any slamming. All you need to do is slightly increase the RPMs from the helm, or even simply via your smartphone, to maintain the speed you were getting with the wind and sea on the beam.

We took advantage of our return to port to check out maneuvering capabilities. Changing direction poses no problem at all: the powercat responds immediately to commands, pivots on the spot, and remains relatively stable in crosswinds. To avoid being caught off guard by the power of the motors (remember that the torque is very high), a maneuvering mode is available on the control panel. Once the mooring lines are secured at the dock, there's no bother with coiling and stowing halyards and sheets or worrying about topping up with diesel. In just a few seconds, our sail-less boat has once again become a floating haven of peace.

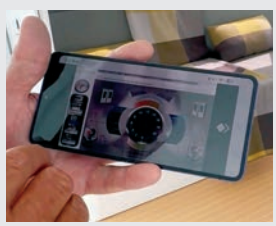
The galley offers all the necessary comforts, and the electrical needs of all the AC appliances are more than covered by charging the solar panels while at anchor.

The Ethos System: On-board Technology Designed for Range

When we think of electric boats (just like with electric cars), the first question that comes to mind is range. For John, the issue isn't so much speed as it is the balance between power and capacity: "*With the Earthling E-40, you'll never have to divert from your route to refuel again,*" he jokes. But in practical terms, how does it work? We mentioned earlier the displacement and weight distribution, which are fundamental to ensuring a good balance between power output and speed. However, in an electric propulsion system, the batteries are the heaviest component, and beyond a certain threshold, adding more batteries (ie. more weight) can paradoxically reduce range. It's clear, then, that to increase range, a hybrid system is the logical solution given the current state of technology. Beyond simply incorporating a hybrid system, John has developed an entire platform that enables continuous monitoring of energy management: the Ethos system. In

Ethos and SCADA

A World of Technology Open to Other Boats



Energy consumption, navigation calculations, cartography, alarms, statistics: all information from the E-40 is available on the touchscreen via the SCADA tool, a truly evolving interface developed by the shipyard. Note that this interface, like the complete Ethos system, is also offered by Earthling to equip the boat of your choice. This system can be controlled from a smartphone but can also be used offline: a speed and fuel consumption gauge and four switches for the motors and generators allow you to sail in "old-school" mode with being online.

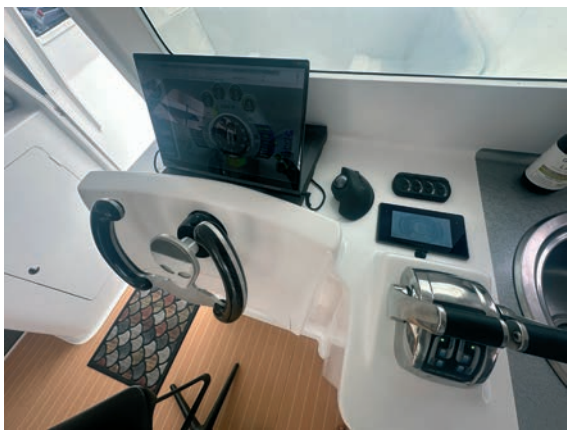
Like the legs of the convertible table in the saloon, carbon fiber elements highlight the importance of weight reduction on an electrically powered boat.

the configuration we tested, the E-40 is equipped with twin 50-kW electric motors coupled with a 45-kWh lithium battery bank. To put it simply, at 8 knots, power consumption is 10 kW, which translates to a range of roughly 45 nautical miles - more than enough for day sailing, but not for passage-making. To increase the range, several energy sources are available on board. First, as you'll notice at a glance, solar panels cover the coachroof. With the current generation of panels, this amounts to just over 2 kWp, but John plans to replace these photovoltaic cells with even more efficient equipment, optimize the panel placement, and perhaps even expand the roof size to achieve 4 kWp.

But make no mistake: the Earthling E-40 is not a solar-powered catamaran. While the panels obviously allow the batteries to be recharged, this charging capacity is primarily intended for life on board while at anchor, and it's actually more than enough for cooking and using all the onboard equipment without worrying about the charge level. So, to be truly self-sufficient and plan for blue water cruising (note that the E-40 has already completed a 1,000-mile nonstop voyage in the Mediterranean), hybridization is, according to John, the best solution (or rather the least bad in forever green terms). As a result, the designer didn't settle for half-measures: on board, there are not one but two 8.5-kW generators. Compact and quiet, they start up automatically if the battery charge drops to 20%. Consuming barely 2.5 liters (0.66 US gallons) of diesel per hour each, they ensure hundreds of miles of trouble-free sailing. And to prepare for any eventuality, redundancy is key: if either of the generators were to fail, the vessel can continue with just one. To manage charging both ashore and under way (still with efficiency and redundancy in mind), no fewer than four 48V chargers are installed on board. All selected equipment is high-quality, proven, compatible, and backed by an international maintenance network.

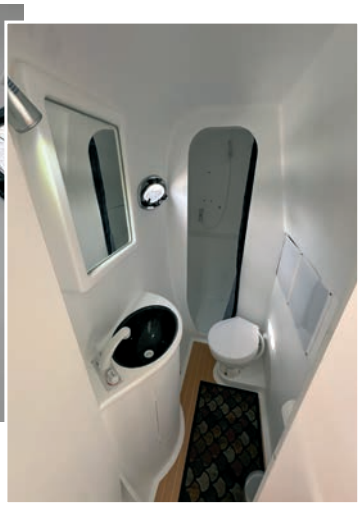
The SCADA System

The cornerstone of the Ethos system, SCADA (Supervisory Control and Data Acquisition) was developed to enable full control of the catamaran. It consolidates all information on a high-quality 16-inch touchscreen computer located at the helm station. This displays all the basic information from the Ethos system, such as instantaneous power consumption, charge status, and battery capacity. Even the slightest malfunction appears immediately and is logged, along with all your navigation statistics. Additionally, a separate screen is dedicated to navigation itself. It displays charts, GPS data, and weather forecasts. This allows you to plan your entire voyage and track it mile by mile. You can instruct the system to arrive at a specific point at a precise time, or to maintain a particular energy consumption level - SCADA will handle everything. While under way, you can adjust the course or speed using a smartphone. Since the E-40 is connected to the internet 24 hours a day, you can check what's happening on board at any time or even fire up the generator an hour before you get to the boat. There's no doubt about it: aboard the E-40, the future is already here!



The simple and functional helm station allows you to control the powercat via the SCADA system or in manual mode. Note the highly original steering wheel, which reflects the unique character of this catamaran.

The helm station is complemented by a small area serving as a chart table, desk, and electrical panel.



Thanks to the forward cockpit being offset to port, the starboard hull features a spacious cabin with a queen-size bed. In each hull, the separate head and shower offer generous headroom.

A sailor and engineer specializing in automation systems and innovations in alternative energy, John McGettigan has worked on projects including the America's Cup.

This multihull with futuristic lines was designed by John. Viewed from this angle, it looks more like a trimaran… and yet, no, Earthlings, the very first one launched back in 2000, are definitely catamarans!

Conclusion

Aboard the Earthling E-40, it's not just about discovering a new multihull - it goes far beyond that: it's a new sailing experience that's simple, efficient, and, it must be said, very enjoyable. We really liked the sleek lines of the hull, the clarity of the deck plan, and the functionality of the living space. This wealth of great ideas didn't come out of nowhere - it stems from the mind of John, a seasoned sailor and visionary engineer. While his powercat is already highly refined, there's no doubt that the E-40 will continue to evolve in line with technological advancements, such as the batteries, which are due to be replaced by hydrogen fuel cells (everything's already planned!). In the meantime, the next two E-40s are in build…

The layout is identical on both sides of the cockpit, with each compartment housing a motor, two chargers, and a generator - all installed in a very neat and organized fashion.

Multihulls World Figures

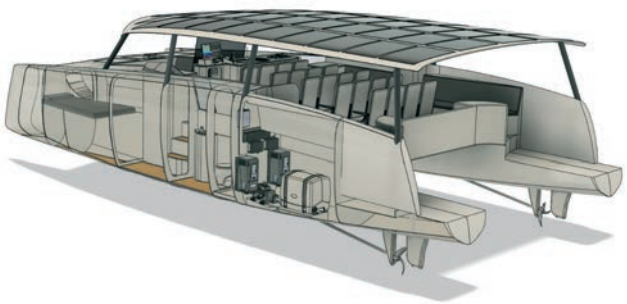
Average speed during our test: 9 knots
Observed average power consumption: 12 kW
Power consumption per generator - output 8.5 kW: 0.66 US gal (2.5 l)/h

Speed (knots)	Consumption (kW)
6	6
8	8
10	12
12	20
14	28
16	40
18	70

The 600-mm-diameter (23.6 in.) high-thrust propeller, developed for the E-40, rotates slowly, without any cavitation, and delivers optimal thrust.

Technical Specifications

Builder: Earthling
Length: 39'4" (12 m)
Beam: 18'1" (5.5 m)
Displacement: 7,700 lbs (3.5 t)
Draft: 2'6" (0.75 m)
Powertrain: 2 x 50 kW
Batteries: 4 x 11 kWh (lithium)
Cruising speed: 10 knots
Maximum speed: 18 knots
Price: € 795,000 ex-tax
www.earthlingethos.com



The Earthling E-40 is available in this E-40T version, optimized for passenger transport.