

tested

Hushcraft Electric Propulsion Systems

PRICE FROM

£15,000



Whatever your views on electric propulsion, I think it is fair to say that it is something that is going to play an increasingly large part in the boating world in the years to come. Whether the technology ever delivers the holy grail of speed and endurance together remains to be seen, although it seems highly likely. In the meantime, there are builders such as Greenline producing new boats with hybrid electric propulsion systems, and dedicated manufactures such as Torqeedo and Mastervolt delivering electric drivetrains for the outboard or OEM market.

What is perhaps lacking, is something for the owner of older boats. What can be done to the old Sealines, Fairlines, Princesses and Brooms, with their ageing diesel inboards, to provide a method of greener propulsion? [Hushcraft](#) is a company that thinks they have the answer.

Ben from Hushcraft comes from a long maritime background, growing up on the broads, working on superyachts, and later designing and building wind farm support boats. With a personal passion for electric propulsion, he saw an opportunity to provide old boats, particularly those that have retired to the inland waterways and yet are fitted with a pair of monster diesel engines, with a new lease of life.

The result is a company that designs, specifies, supplies and installs retrofit electric propulsion systems. Ben informed us, when we met him onboard the demonstration boat, that they can come up with a solution for almost any motorboat, including both fully electric, and hybrid solutions. The Princess 41 *Eva May* has the latter. The 1979 boat is still fitted with her twin diesel engines that can propel her at speeds of up to 20 knots, but take a look at the stern and you will see a new GRP bathing platform that replaced the original slatted wooden type. This is more than just a cosmetic addition though, as this pod actually contains the boat's electric motor.



The 15kW electric motor on the Princess was mounted in a customized bathing platform 'pod'

The systems available are many and varied, so what we see here is more an example of what is possible, rather than a solution for all boats. Inside the pod, which is buoyancy neutral, *Eva May* is fitted with a 15kW water-cooled motor. Inside the boat, beneath the aft cabin bunk, is the water-cooled control unit. All motors of 15kW and above are cooled with water, using an enclosed cooling system containing glycol and an externally mounted heat exchanger. This means that there is no possibility of blockages causing an overheat. Smaller units are air cooled.

Powering the motor is a bank of AGM batteries, which was smaller than I expected, fitted conveniently down between the engines where their weight is low and central. The size of the battery bank is key when it comes to electrical propulsion, but secondary to this is the ability to recharge it. Ben informs us that he likes to work to a system that will recharge the bank fully from a standard shorepower socket in 8 hours. Obviously you can have a larger bank, which will take longer to charge, or you could use a 32A supply, which will allow for a bigger charger, but again this is all part of the customized philosophy of their product. On *Eva May* the bank consists of eight 12v 212Ah batteries wired to provide 48V. The result is an endurance of around four hours at 4mph, or roughly 16 miles. Lithium Ion batteries are an option, but at around



The drive is connected to the rudders and is steerable up to 45°

tested

Hushcraft Electric Propulsion Systems *continued...*



A helm instruments and an app provide data on power consumption, battery state and usage

**Motorboat
Owner**
"A viable solution
for electric
propulsion"

Value	3/5
Usability	5/5
Performance	3/5

eight times the circa £3000 price of the AGM battery bank, the benefits of lighter weight and slightly faster charging times come at a very high price.

Hushcraft use products from Kräutler, an Austrian firm with a long history of providing electric motors for boat propulsion. The systems they offer include fully steerable bronze pods like that fitted to *Eva May*. This is simply connected to the boat's existing rudder setup and provides around 45° of vectored thrust in each direction. The drive leg only just dips beneath the hull line, so drag is kept to a minimum when not in use, and this is aided by using a folding propeller.

You would think that a 41ft, 10-tonne, boat with the equivalent of just 20hp would be somewhat difficult to control, but that is not the case. The torque and power delivery is such that acceleration is actually quite brisk, stopping power is pretty good and turning ability is excellent. Our test boat's folding propeller is a compromise, and a fixed prop would almost certainly be more efficient, particularly in reverse. It was a strange sensation, departing the pontoon in a large flybridge boat in utter silence. It was also strange to settle into an outboard 'steer before gear' mindset when maneuvering, but once I had got my head around it, I found the boat utterly simple to drive. It could turn on a sixpence, and even though it was fitted with a bowthruster I did not once feel the need to reach for it as I moved around the tight confines of the marina and moored it back on the pontoon.

Out in open water we managed to get around 5.6 knots out of the boat, against a claimed 6 knots top speed, but where it was most comfortable was with the throttle set at around 60%, and the boat slipping through the water in almost complete silence at around 4 knots. I say almost complete silence as there was some motor whine, but

while this was quite obvious when flat out, it was barely audible at these lower 'cruising speeds'. Drop down to three knots and it would be fair to call it completely silent, at least from the flybridge.

The cost of a system like this is always going to be a big factor, and with a starting price for a small system of around £15,000, you are going to have to be committed to the electric boating ideal. Having said that, you can offset some of this with reduced fuel costs, and reduced wear and maintenance on your internal combustion engines, so you would need to do the maths. If you have a boat on the inland waterways with a broken engine, it may actually make a financially viable alternative to replacement. The system on board the Princess would set you back around £25,000 and, as a general rule of thumb, you can figure around £1,000 per kW with systems available from 1.5kW, all the way up to 120kW.

While a Hushcraft system clearly works on a boat like the Princess 41, it would appear to be most suited to displacement boats, sail boats, and particularly to boats based on the inland waterways, where they could cruise for most of the day at river speeds in near silence. As a backup propulsion system on a sea going vessel I can see its advantages, one of which was that we didn't need to run the winterized engines during our test, so you could take advantage of that odd nice day without having to re-commission and then re-winterize, but until electrical storage, charging and management provide us with the ability to run at a decent speed for a few hours, its use on the coast is limited in planing hulled boats.

If you want to see *Eva May*, and experience a Hushcraft system for yourself, Ben will be offering demo rides at the Thames Used Boat Show at Thames and Kennet Marina in April. **Contact: Hushcraft www.hushcraft.com**



On a hybrid boat, the system can offer independent redundancy

