



Poetry in e-motion

We're living in an increasingly eco-friendly world, as Sam Fortescue discovered with the new Hanse 315

For all the talk and the hype around electric boats, there are relatively few boatbuilders that have adopted the technology

yet. And of those few – Saffier, Bente – the majority are niche high-end, small boat producers. Except for one: Hanse Yachts.

The world's third largest production boatbuilder, responsible for Moody boats, the muscular Hanse line and the sportier Dehler brand, surprised the sailing world last winter by unveiling an entirely new concept for electrical propulsion on its entry-level yacht, the Hanse 315.

Hanse's innovation was to encase an electric pod drive in the rudder itself – a world first. The 10hp equivalent motor is basically a Torqeedo 4.0FP drive, connected up to a double battery bank totalling 5.4kWh and the usual range of chargers.

Testing conditions

I finally got my hands on the so-called e-motion rudder drive during the autumn, for a test sail out of Workum just off Holland's IJsselmeer.

Conditions were ideal – sun and a good Force 5 kicking up a chop in the inland sea.

We began by simply motoring down the short canal linking the

marina and the open water. In these smooth waters, the boat was soon moving at 6kt through the water, making a noise like an egg-beater at its full throttle position of 4.5kW. Acceleration is good and smooth, as the electronics of the engine bring it quickly up to speed.

Speed naturally dropped in choppier waters – to around 5.1kt with the wind just off the bow at

ABOVE
The new eco-friendly Hanse 315 is extremely easy to manoeuvre

full power. And motorsailing in the same conditions, we found that full power on the motor would boost our speed by about 1kt, from 6.5kt to 7.5kt. Just as it would if using a diesel engine to motorsail, the extra power from the engine allowed us to point consistently closer to the wind without sacrificing speed.

Next we tried reversing into the wind (with the sails furled, of

'Few need persuading about the merits of losing the grease, diesel and weight of a conventional engine'

course). Surprisingly, the motor develops less than half of its rated power when running astern. Its 1.9kW took around 15 seconds to bring us to a standstill from full ahead, and was then enough to get us butting backwards into the wind and the chop at 2-3kt. There was, however, a problem. Putting the pod in the rudder has the effect of making the propeller

the aft-most point on the boat. There are huge advantages to this in close-quarters manoeuvring (see below), but in the admittedly unlikely scenario that you want to motor astern into chop, the natural pitch of the boat keeps lifting the prop out of the water so it sucks in air and cavitates. Motoring ahead into the same conditions tends to push the bow up and pull the stern down, so the effect is hardly noticeable – just a slight speeding and slowing of the motor's hum.

Close quarters

Of course, what really sets an electric boat apart from its diesel cousins is its manoeuvrability around the pontoon. The motor supplies full torque across most of its speeds, and acts more quickly on the boat. This is doubly true of the Hanse 315, because of the way the pod is mounted in the rudder. Hanse's designers have widened the angle the rudder can reach to 50 degrees each way, and as you turn the tiller, you are also turning the motor. At slow speeds, a boat turns because the rudder is deflecting the prop wash. Turning the whole motor is a much more efficient way of doing this, and gives you instant response. Furthermore, positioning the motor so far aft creates much greater leverage to spin the boat around its keel.

I'd seen the videos, but it is something else altogether to feel the way the boat swings round – pivoting about the keel. Suddenly, the prospect of manoeuvring into a really tight marina berth loses some of its power to daunt. At first, I found myself over-steering in the way I would in my Sadler 34. The reflexes of this boat mean that you can wait until the last minute before turning into a berth, and you can expect to get round much tighter corners. She will happily do figures of eight at speed around mooring posts, and weave in and out of obstructions.

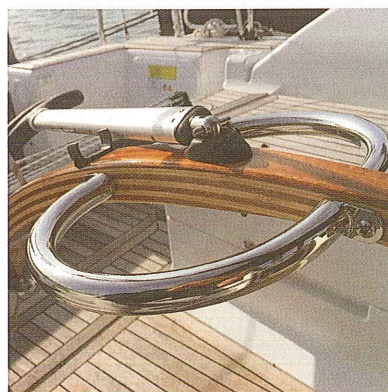
My only gripe here is that the lower power astern deprives you of that useful ability to jam the brakes on. However, this is outweighed by the manoeuvrability at every point of the turn, ahead and astern.

YACHT DESIGN
German boatbuilder, Hanse Yachts, have a reputation for pushing the boundaries of design

DISPLAY
The display gives you information on power consumed by the motor, rpm, state of charge of the batteries and range at the current speed

BATTERIES
The bulk of the cost of the eco-friendly approach is still the lithium-ion batteries

RUDDER
Hanse's designers have widened the angle the rudder can reach to 50 degrees each way, and as you turn the tiller, you are also turning the motor



The system

Besides the motor itself, the basic electric system includes lithium-ion batteries, an electronic throttle with a digital display, a kill switch and a battery charger. Torqeedo throttles are entirely electronic, with built-in resistance to give you a bit of feel as you nudge forward or back. They have the same angular, modern design as Torqeedo's outboards. I slightly objected to the way you have to push a stiff button on the throttle to ease it out of neutral (stand-by). This made it harder to flick from ahead to astern when manoeuvring, but this

may be a reflection of my berthing skills. A neutral lock is of course necessary to stop the light throttle being accidentally brushed by a leg in the cockpit, but I would sooner see it where you naturally grip the lever.

The display gives you information about the power being consumed by the motor, rpm, state of charge of the batteries and range at the current speed. As with a diesel engine, range drops off dramatically at higher revs – from about 15nm at 4.5kt of boat speed to just 9nm at 6kt.

With the electric motor and a basic double battery bank on a conventional charger, the simplest electrical system for the Hanse 315 adds around €9990 to the base price of €680,000 (all ex-VAT). A sparkier installation with two extra batteries and the turbo charger (cuts charging times from 10 hours to 3 hours) adds €10,000 to this cost. In our test boat, there was also a small 4.4kW Whisper Power generator to extend range. This lived under the companionway where the engine would normally be, but adds another €7000 to the cost of the set-up. It was simple to start and stop from the control panel over the chart table, but I found it very noisy. Hanse says this was the first model released and next time, they would install sound insulation.

Costs for going electric on a larger or more customisable boat might well form a lower proportion of the end cost. That's because Hanse runs an extremely efficient production-line model, where any slight modification to the standard spec adds disproportionate cost. The bulk of the cost is still the lithium-ion batteries, and that won't change until the technology takes another leap forward.

Sam's verdict: I would certainly consider an electric motor for the Hanse 315. Handling is superb and noise levels much lower. Few of us need persuading about the merits of losing the grease, diesel and weight of a conventional engine.

EASE OF USE: ★★★★★

PERFORMANCE: ★★★★★

COST: ★★☆☆☆

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