JESSIE ROBERTS-SMITH

THE blue-green conundrum

Is an eco-friendly GRP boat possible? Jeremy and Fiona Rogers, with their activist son Kit and his wife Jessie, set out to build one, based on the enduring Contessa 32 hull. *Nic Compton* went to find out how they'd got on

There's not much that Jeremy and Fiona Rogers don't know about building durable production yachts. Best-known for their iconic Contessas, at the peak of production in the 1970s, they were churning out a boat a week. At the same time, they collaborated with Doug Peterson to produce a long line of successful Admiral's Cup racers.

Equally, there's not much that Kit (their son) and Jessie Rogers don't know about sustaining endangered sea creatures. Both are former activists who worked on whale research and filming vessels for more than 10 years. They met after Kit was arrested in the Galapagos Islands for protesting at the over-fishing of sea urchins, and Jessie interviewed him for news agency Reuters. The couple subsequently bought a 60ft (18.3m) ketch which was used for filming the BBC's *Blue Planet* series, before returning to the UK after the birth of their first son.

When the two generations of Rogers – the 'blues' and the 'greens' – started discussing building a family boat, there was

Above: **Jeremy Rogers at the helm of the hybrid diesel-electric Contessa 32 *Calypso***

Left: **The Kebony (sustainable 'manufactured' hardwood) deck and toerail**

never really any question what the design would be, especially as Jeremy just happened to have a "spare" Contessa 32 deck that "needed using up". What was equally clear, however, was that the boat would not be a standard Contessa, fitted out with the usual hardwoods and only running a carbon-emitting diesel engine. For both the blues' and the greens' requirements to be satisfied, there would have to be compromises on both sides.

Source of wood

The debate really got going over the issue of what timber to use. Tropical hardwoods were a no-no because the timber was either unsustainable or, if it was farmed, it was grown too quickly and was therefore not durable. But what were the alternatives? After some research, they discovered Kebony, an impregnated timber which is billed as a 'sustainable alternative' to tropical hardwoods. By cooking locally-grown timber such as pine and maple in a vat of furfuryl alcohol – a by-product of the sugar industry – the manufacturers create a wood which is not only as durable as teak but also looks similar, even 'greying' to a similar colour. And, unlike other impregnated wood systems, it does not leach toxic chemicals and can therefore be disposed of without damaging the environment.

The test was whether Jeremy, the blue camp's master craftsman, liked it. He would be machining hundreds of feet of the stuff, so it had to be workable as well as sustainable. Jeremy's verdict was that Kebony was actually harder than teak and a little more brittle, making it ideal to shape with electric tools but harder to work by hand. Overall, he gave the wood an enthusiastic thumbs-up and reported that it made the workshop smell of molasses.

The discovery of Kebony opened the eco floodgates and made the Rogerses (of both colours) realise that there were environmentally-friendly marine products out there, but that they would have to break out of their usual habits to find them. The issue arose again over what adhesive to use to stick the Kebony decking to the glassfibre deck. The automatic choice for most boatbuilders would be the ubiquitous Sikaflex, but this product contains isocyanates, which are carcinogenic and known to cause asthma. Instead, they sourced Saba, a solvent-free sealant produced in Holland, which has the added benefit of not going off in the tube, thereby reducing waste.

Can GRP be green?

By now, the eco-boat had attracted the attention of The Green Blue, an environmental initiative set up jointly by Royal Yachting Association and the British Marine Federation. The organisation was supportive of the project, but wondered whether a GRP hull could be genuinely green, given that it uses so much of one of the world's scarce resources, oil. It was a question I put to Jessie when we met just before *Calypso*'s maiden sail.

"It's true that GRP is not an obvious eco-choice," she said. "But if you think that a well-built GRP boat will last many

generations, if not forever, then it seems like a sensible use of resources. It's a lot less wasteful than flying to New York. The real issue is disposing of it, as badly-built boats end up in landfills in 10-15 years' time. But there are many Contessa 32s which are 30-40 years old and still sailing."

The Green Blue were apparently persuaded by the Rogerses' argument in favour of GRP and offered them a place at the Southampton Boat Show providing they turned the boat into a showcase of environmentally-friendly marine products. With the show six months away and a clear 'green' agenda to follow, suddenly the pressure was on. And the more they investigated, the more questions they came up against.

Hybrid propulsion

An early dilemma was the means of propulsion. A conventional diesel engine was, of course out of the question, but, while an electric engine had obvious green appeal, fitting a fixed-bladed propeller to charge the batteries under sail was anathema to the blue camp because of the extra drag it would create. The solution came in the form of Graeme Hawksley of Hybrid Marine, who has created an electric/diesel system which combines the best of both worlds. An electric motor piggybacks a standard Beta diesel engine and, by locking the prop in reverse, turns into a giant dynamo which charges the batteries while under sail. In diesel mode, the system runs the engine at optimum revs, regardless of cruising speed, and uses any surplus power to recharge the batteries. The blue team's concern about drag was addressed by fitting a feathering prop which can be streamlined when not charging.

Once the boat was fitted with such a powerful generating capacity, it was tempting to go all the way and make it all-electric, including cooker and heads. There was even talk at one point of fitting a microwave. In reality, however, the batteries needed to feed so many appliances would have taken up too much space, so compromises had to be made. In any case, while the Rogerses were keen to put green technology to the test, they didn't want to put all their eggs in one basket. So a gas cooker was installed (albeit 30 per cent more efficient than a normal one), and a manual loo – and no microwave.

'Eco' credentials

In truth, there was no absolute 'green' standard which was applied to the project. So, while one product might be genuinely sustainable (such as the solvent-free varnish from Le Tonkinois), another might be manufactured by a company which simply had a better 'eco' credentials. Winches fell into the latter category. Harken was chosen because, not because their product was any more biodegradable than anyone else's (though at 40 per cent lighter than earlier models, they clearly do use less resources) but because the company practices policies such as energy conservation, recycling and teleconferencing. The fact that they sponsored the Plastiki project also earned them points. Likewise Garmin, which Jessie likens to "the Google of electronics" for their uncanny ability to be ahead of the curve. An ISO1401 accreditation for sustainable management from DEFRA helped too.

"Some companies just seem to get it," Jessie says, "and some don't."

Green anti-fouling

The green camp also came up with an innovative solution when it came to anti-fouling. Steering well away from the traditional copper-leaching paints, they came up with Hempasil X3, a rubbery coating so slippery "that nothing in the foul family can really get its toes in," according to Jessie's blog. The product is most efficient at speeds above 7 knots, when not only does algae miraculously drop away, but there is a significant increase

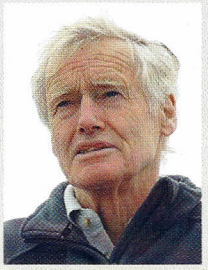
The Contessa legend

Jeremy Rogers had been building wooden Folkboats and the GRP Contessa 26 for 10 years before he made one of the biggest gambles of life: to invest in the design and tooling for the bigger boat so many his customers had been asking him for. The resulting Contessa 32 was a success from the moment the first two boats were launched in 1971. Within weeks, Jeremy won his class at Cowes Week in his boat, *Red Herring*, and the following year the design was named Boat of the Year at the London Boat Show.

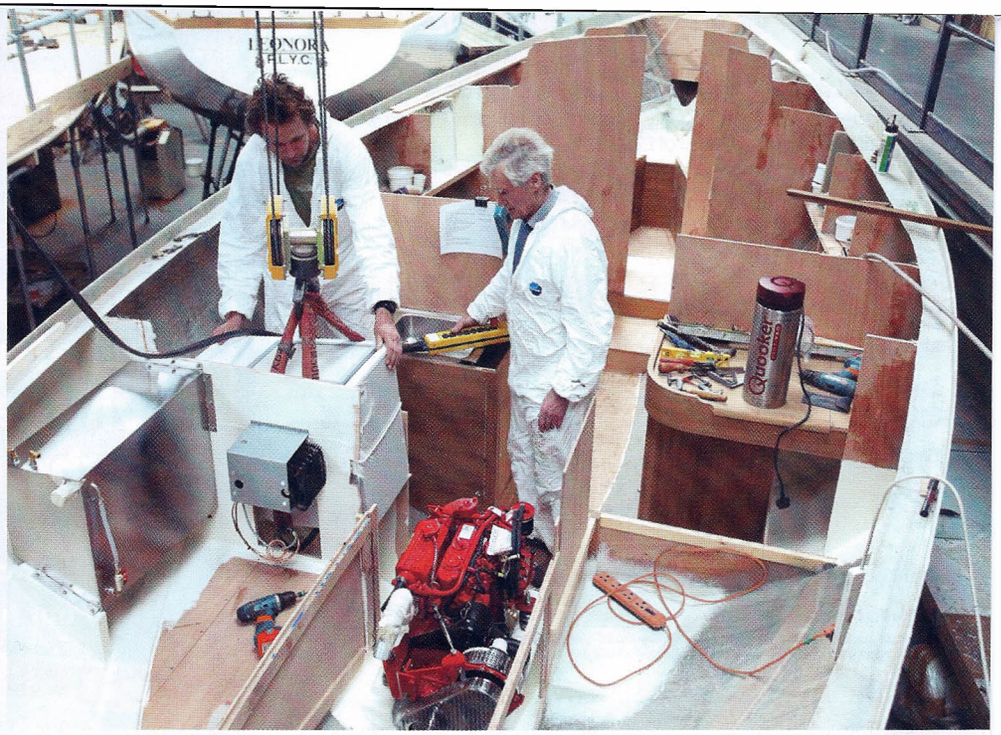
It was the start of the Contessa legend. The figures say it all. In the first 10 years of production, some 500 boats were built and, by the time production ceased in 1983, some 600 boats had been built. Since production resumed in 1995, sales have been a bit slower, but the yard still has a thriving business restoring the old boats.

The acclaim proved well deserved, as was demonstrated by numerous daring voyages made in Contessa 32s. There was Decla Mackrell, who sailed 50,000 miles around the world in his *Sean-ois* in 1979-83. And Ty Techera, who sailed from New York to San Francisco in *Gigi* in 1984, making her the smallest yacht to round Cape Horn the 'wrong' way. More recently, Seb Clover at 15 became the youngest person to cross the Atlantic single-handed in *Reflection* in 2003.

But perhaps the Contessa 32's finest hour came during the 1979 Fastnet Race. Out of 58 yachts that started in Class V, only one boat completed the course: *Assent*, a Contessa 32 owned by Willy Kerr and sailed by his son Alan. In the official RYA inquiry on the disaster, the stability curve of the Contessa was used to illustrate the seaworthiness of long-keel designs compared to fin-keelers such as the Half-Tonner.



From Top: **Jeremy Rogers, Willy Kerrand his Fastnet-surviving *Assent*, and Cape Horner *Gigi***



Clockwise from near left: **Hybrid electric engine; laying Kebony cabin sole; the finished effect; dropping in the oven; the Featherstream prop; batteries**

in fuel efficiency. The application is currently used for commercial shipping and military vessels – not so much for its green credentials but for saving on fuel costs – and *Calypso* is thought to be the first yacht to be treated with it. Once the Hempasil has been thoroughly tested, the Rogerses will try out an ultrasonic system which is designed to scare weeds away by emitting sound waves. No, really.

Setting sail

As we headed down to Lymington yacht haven for *Calypso*'s maiden sail she looked at first glance just like any other Contessa 32 – albeit one with a solar panel on the coachroof and a wind turbine on her pulpit.

As we backed out of our berth, however, there were a couple of clues which the observant passer-by might have spotted. Firstly, Jeremy didn't bend down to change gear, but manoeuvred the boat using three touch buttons embedded in the tiller — a big improvement on the usual awkward to reach Morse controls. Then there was the silence–well, not quite, as the Featherstream prop fitted to provide 'propcharge' was in need of adjustment, but the noise was no more, at cruising speed, than a conventional diesel engine makes while idling.

With a light westerly breeze in the Solent, the electric motor immediately came into its own, giving an extra boost of speed with minimum fuss, though at our cruising speed of 4 knots, the batteries' range was just two hours – less if the engine was throttled up. That said, there are six different ways of charging the batteries, and fitting lithium-ion batteries would greatly increase the range. As it was, we eventually had to switch over to diesel when it became apparent that if we didn't hurry up we might lose our berth at the boat show!

Above: **Three generations of the Rogers family cheer *Calypso*'s launch**

Below decks, the varnished Kebony makes a striking contrast with the white deckhead and cotton upholstery (canvas sourced from a family-run mill in Spain). Some people will love it, some people will find it too dark, but in any case it certainly draws attention to the issue of wood and why this type has been used. More green features are in evidence in the galley, which boasts a super-efficient fridge shaped to the side of the hull, and space for recycling. But the *pièce de résistance* is the Quooker boiler which, for a small electrical input, provides instant hot water at 100°C for drinks, cooking and washing up.

There is of course a price to pay for such eco-technology, and that is the notion of simplicity. *Calypso* fairly bristles with high-tech gadgets, and almost every other locker seems to contain some gismo flashing a light at you. But perhaps that isn't the point.

While not presenting a definitive solution, the yacht raises important issues about boatbuilding methods and shows what is possible. Some of the ideas will appeal, some won't, but to merely increase awareness of the issues, is to achieve a green objective. As for the blues, *Calypso* proves that you can turn green without compromising comfort or safety.