

Electrifying progress

The Special Boat Service is a small Hamble-based company selling folding RIBs and ePropulsion motors, run by Steve Bruce. Recently electric motor sales have soared, with a fourfold increase in the past year. **Liz Rushall** describes how the company got where it is today

Steve Bruce, a charismatic Scotsman, sailor and salesman, is managing director of The Special Boat Service Ltd, a small Hamble-based business which includes the ePropulsion electric motor distributorship for UK/Ireland and FRIB foldable ribs in its portfolio.

Due to a rapid increase in ePropulsion sales the business, which he runs with his partner Clare, has recently moved into a larger office and workshop premises in Hamble and set up a manufacturing unit in Fareham for boat production, and recruited more people to join the original team of four.

“Business went crazy during lockdown and it felt people were planning the important things in life – like boating!” explains Steve. “Evidently, there’s growing awareness of the environmental issues and ocean health, and our sales of electric motors have increased four-fold over the previous year. We believe we are seeing a step-change in consumer behaviour towards electric propulsion.”

Following his childhood, racing at Royal Gourock Yacht Club, Steve subsequently joined the British Army as a meteorologist, become an Arctic Warfare Specialist and later an RYA Cruising Instructor. His army roles took him to places many of us will never see, where he regularly encountered evidence of climate change impacts on the environment.

A decade in corporate sales followed the army and then a move into yacht brokerage as sales manager with Seaquest Yachts. Steve set up his current business The Special Boat Service (SBS) Ltd, originally as a small yacht management and brokerage for Saare Yachts.

Changing course

It was here that the business took a complete change in direction. During a trade show in Russia in 2014 Steve was introduced to the development team for a unique boat – a folding RIB that was being produced for military purposes.

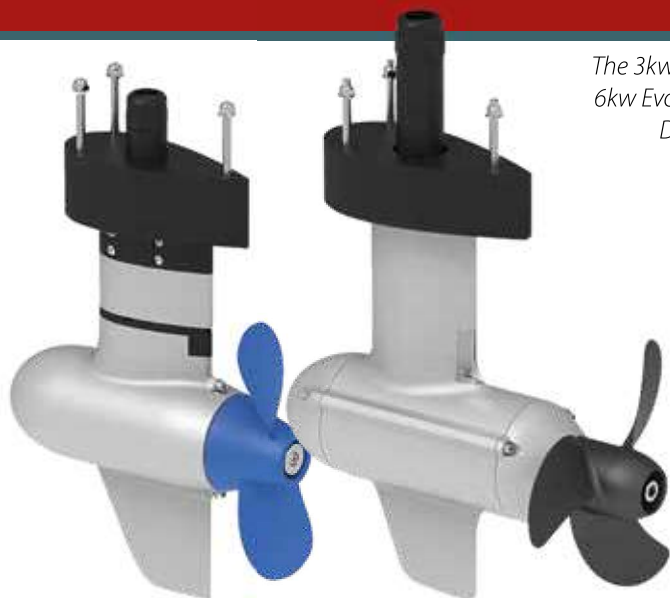
Intrigued by the incredibly strong and simple design, which locks together by slotting and bolting the floor together with a few wingnuts, he saw obvious opportunities for cruising sailors. FRIBs are a foldable rigid inflatable boat that provides a more robust, dry ride in wind and waves than a typical inflatable yacht tender. The fully rigid GRP floor folds and packs down to fit inside a reasonable sized boat locker or car boot.

Having struggled to find a suitable tender that was easy to stow for his cruising customers, he became the UK importer. Very quickly the FRIB sales took over from the yacht brokerage, and SBS took on the European distribution. In 2016 it also took overall responsibility for product development and global distribution.

During 2021 it took on manufacturing as well. A new UK-based production unit has been set up in Wicor Marine near Fareham, with new tooling and moulds to build the FRIBs locally, with the first production boats being launched at METS in November 2021.



The FRIB 430 can comfortably hold six people yet folds down to fit in the back of a family hatchback



The 3kw and 6kw Evo Pod Drives



Case Study: Sadler 29

Ian Thomson converted his Sadler 29 to electric propulsion to have the advantage of no noise, no vibration, diesel fumes or maintenance to worry about. He felt that for cruising in the Solent and the occasional cross-Channel trip, the power supply he has chosen is completely feasible provided he uses the motor as auxiliary power and doesn't motor long distances against spring tides.

Ian is a keen sailor who owns Nestway Boats and is a dealer for both ePropulsion and Torqeedo, so he is not a typical leisure sailor, but his conversion shows what is possible today.

The boat has been fitted with a 6kW Pod drive with 18kW of lithium batteries replacing the original Bukh DV20 diesel engine. After a season of sailing Ian found it gave good results as electric motors are very efficient, and you don't need as much power as a traditional internal combustion engine. Ian monitored range over a season of sailing in the Solent and found that in a range of conditions he got:

- 3.3 knots at 1kW output, 54 miles
- 4.5 knots at 2kW output, 40 miles
- 5/5.5 knots at 3kW output, 30 miles

3kW equates to about 4.5hp, yet he could achieve 5 knots with 3kW. The torque is direct and instantaneous, so it can turn a larger propeller at a more efficient angle.

The Pod drive allows hydro-generation to recharge the batteries under sail, and Ian says about an hour under sail normally puts in nearly as much charge as the motor uses to come in or out of Portsmouth harbour. After sailing for a few hours it creates a net gain in battery charge. In addition to solar panel and hydro-generation, Ian recommends taking a 2kW petrol suitcase generator in a locker for a longer voyages. This would be enough to charge the batteries and get you home from mid Channel at around 4 knots.

The two 9kW batteries, each weighing 87 kg, take up a small amount of space where the engine used to sit, and it would be possible to add another 50% battery capacity and still weigh less than the combined weight of the engine and diesel tank. The additional power would make an 80-100 mile range feasible.

Another advantage of the change to electric is the additional storage space freed up by removing the engine and gearbox, cooling system and diesel tank.

A growing team

As the business has grown, so has the team. Technical Manager Ricky Cole joined in 2015 after meeting Steve in the Whyte Harte inn in Hamble. Coming from a career in as a master technician in car manufacturing and racing, he manages all the design and development projects, including the new production unit and developing the CNC moulds.

It was a fortuitous meeting which has helped expand the business and the team, most of whom are local to Hamble. Rick introduced Chris Rand, an experienced electrical technician and keen kite surfer, who manages dealer sales. Two laminators have joined the new FRIB production team which will be expanded over the coming months.

Kevin McEntee recently joined in a new role as aftercare manager. With his background at Kwik-Fit, turning around failing franchisees and training up service teams, he'll be developing training for electric propulsion installers alongside supporting customer services.

Clare Murray also took a change in career. A former charter crew, then a midwife responsible for delivering new lives in often precarious situations, Clare was looking for a new direction. Steve persuaded her that the business needed a firm hand to manage its finances. Clare is now kept busy as finance and operations manager, taking care of the day to day running of the business.

Going electric

Inevitably many customers for the FRIBs were also in need of a motor, so this became a natural extension for the business. Steve felt they needed a better means of propulsion than a traditional outboard. "We all had deep-felt, growing concerns about our oceans. In my brokerage days, I was uncomfortable about putting yet more diesel engines on to the water. For the FRIBs the right path was clearly electric propulsion and helping our customers make that step-change too."

An initial liaison with Torqeedo to provide engines didn't work out and Steve found out about ePropulsion, which had been founded in 2012 by a team of engineering and robotics students who studied together at the Hong Kong University of Science and Technology (HKUST).

ePropulsion's ethos is to create a boating experience which is not only better but ultimately saves you time and





money. Its electric motors require almost no maintenance, no winterising and are considerably kinder to ocean life than any engine directly powered by fossil fuels.

After trialling an ePropulsion outboard, the team were convinced of its superior performance and switched to its motors in 2016. Initially sales were mainly anticipated for customers of the folding RIB boats, which provided a steady market. However, the dealer network has rapidly expanded, giving much wider coverage across the UK and Ireland. The range has also grown to include Pod drives (where the gearbox and drive unit is mounted beneath the boat) as well as outboards... and overall demand for the electric propulsion, and outboards in particular, has taken off.

Despite the pandemic, sales more than quadrupled for ePropulsion products, with customers choosing to adopt electric for their tenders or convert their yachts, as well as growing interest from yacht builders.

Steve explains, "The ePropulsion culture is a constant process of engineering innovation and testing, with strong connections retained with researchers at HKUST. For cruising sailors that means motors that are clean, quiet, powerful and wholly reliable. There's no more jumping into the tender from your yacht wondering 'will it start?' And no noisy diesel engines or messy, smelly fuels leaking into your boat, or worse, into the sea."

■ Find out more about FRIBs at www.frib.com and ePropulsion motors at epropulsion.uk.



Price guide

Sadler 29 Pod Drive set up:

- Epropulsion 6kW EVO pod drive **£2,500** (inc VAT)
- 2x Epropulsion E-175 9kWh lithium batteries, **£4,000 each**
- Epropulsion 30A mains charger, **£400**
- Remote control throttle, **£250**
- Miscellaneous connection cables, **£300**
- **Total system cost £11,450**

Spirit 1.0 Plus outboard motor

Includes 1kW outboard motor, detachable, floating 1276 Wh battery, a tiller and charger. Extra-short/short shaft **£1,800**, long shaft **£1,850**

Battery power

A key component of the ePropulsion motors is the proprietary battery technology. The portable Spirit 1.0 outboards come fitted with an integrated, detachable and floatable battery. The larger, longer-range outboards and the inboard Pod drives use the e-Series LFP (lithium ion phosphate) batteries, which take up less space than many fuel tanks.

All the ePropulsion motors are compatible with lead-acid batteries but there are key efficiency reasons for adopting the eSeries batteries, primarily less running cost, less weight and a considerably longer battery life cycle. They are all recyclable too.

Comparing LFP and lead-acid batteries reveals a large capacity gap. For example, the LFP 175Ah battery (51.2V) and a 276Ah lead-acid battery (12V) deliver the same runtime of 90 minutes at full throttle for the Navy 6.0 product. A lead-acid battery has a lower usable capacity, normally around 50% at 1C discharge (the 1C rate is a way to measure battery capacity), while an LFP battery has almost 98% – an inbuilt battery management system only allows its cells to discharge to a maximum amount. This means a larger labelled capacity is needed for lead acid batteries to deliver the same amount of run time.

The ePropulsion batteries also have considerably longer life cycles, saving on replacement costs. After 3,000 cycles at 80% depth of discharge (a normal industry measure), ePropulsion's E175 remains at over 80% capacity. If you use it every day for more than eight years you will still have more than 80% capacity available, so it's highly feasible to reach over 10 years of operational life.

Reductions in weight are also significant. The LFP battery has a larger energy density and usable capacity that takes up less space and adds less weight in your boat. For example, a E175 51.2V battery weighs 87kg compared with 12 x AGM 12v/92Ah batteries weighing 343kg. This can lead to considerable savings in space and weight, for example when removing the space traditionally needed for a diesel engine, fuel tank and batteries.

Run times and range are an important factor with electric motors and these vary depending on battery size, running speed, type of boat and of course sea and weather conditions. Typically, the E175 9kWh battery can run a 6kW motor for 1.5 hours at full throttle, but for up to four times as long at a slower speed. The distance you can travel depends on size and number of batteries, in the same way you choose how much fuel to carry on board.

"Managing an electric motor on your boat is little different from filling your car with fuel," explains Steve. "It's about planning ahead for the voyages you are doing and setting your boat up with the right level of power. Few of us motor around at full speed. You can carry sufficient batteries for your trip; you can combine battery power with regeneration options, such as solar, wind and the motor's built-in hydro-generation while sailing; or you can recharge in a marina. For a long trip you could hire a suitcase-sized portable generator as back-up."

