Andrew Simpson

Monthly musings from PBO's consultant editor

Read Andrew's blog at www.andrewsimpson.co.uk

The sound of science

The winds of change in turbine technology encompass sound advice from the aeronautical industry

Among many other distinctions between cruising sailors, when it comes the end of each day they tend to fall into two types – those that will do almost anything to seek refuge in the nearest marina and those that attempt to nose out some sheltered anchorage where they can spend the night in relative tranquillity. Now, I shall suppress my natural disappointment at the antics of that first sad group, succumbing as they do to the fleshpots and calorie sumps of such places as Dartmouth, Poole and Cherbourg, and identify myself with those who would prefer to find themselves anchored in Studland Bay or perhaps in the lee of the wondrous Islas Cíes, hard by the mouth of the Ria de Vigo in north-west Spain.

But, to be fair, it's not just gluttony and a taste for low company that draws the marinaphiles to the clattering world of pontoons. Having squandered a portion of electrical power that half a century ago would have powered a small hamlet, many have to plug in to save their lamps from dimming or to heat water for the obligatory pre-dinner shower.

This isn't the time or place to dwell on the extravagance of modern yacht electrics – a subject demanding enough words to burst this column – but simply to distinguish between the needs of the two groups. The first expects to be guaranteed a nightly transfusion of electricity. The second must eke out what it has, knowing that every milliwatt consumed is another step towards electrical bankruptcy.

Actually, most cruising sailors – and certainly most long-distance cruising sailors – have supplemented whatever battery charging accrues from using the engine with some other form of generating capacity. The larger boats usually have diesel gensets, while the smallest rely on solar panels and wind (or towed) turbines. Some carry all three.

Of these, the typical solar array is the least productive but has the blessed advantage of being totally silent – a virtue shared (almost) with towed turbines. This contrasts markedly with gensets and wind generators, though there's considerable variation in the decibel department depending on type and installation.

At 12m LOA, *Shindig* doesn't have the space or the displacement to accommodate a diesel genset, so for us this option is closed. Instead, we rely on a 40W solar array and a Superwind 350 wind turbine.

Frankly, the solar panels are a bit on the puny side, punching out no more than 2-3A at best. However, the Mediterranean sun does its bit to keep the panels on their toes and their input is certainly useful – particularly for maintaining the batteries when we deactivate the wind generator, most notably when we're not there.

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The Superwind, on the other hand, is much more productive, capable of belting out nearly 30A in a strong breeze, yielding roughly 10 times the power of the solars.

For seekers of peace and quiet, however, wind generators come with a problem. None are totally silent, and the most strident would shame a banshee. One American-made brand, since modified by public demand, shrieked so cacophonously it was banned in many marinas. There were tales of sabotage by outraged neighbours. Insults and blows were exchanged. The merry slap of a thousand halyards was nothing compared to the yodelling of this device in full voice.

We chose the Superwind because, firstly, it was exceptionally well engineered, and secondly because it was, by repute, audibly discreet – and a mannerly shipmate it proved to be. After a couple of years' use, I discovered that the blades had been redesigned to make the Superwind quieter still – quieter by 50%, it was claimed.

So, never let it be said we don't do the research. A few days later, the new blades arrived and their secrets revealed. Above and below each blade had been added a row of tiny raised chevrons. Micro-vortex generators! These are a familiar refinement in the aeronautical world. They work by creating tiny tornados (vortices) on the surfaces of aerofoils, thereby discouraging the airflow from peeling away at high angles of attack. Along with increased lift, they are also known to bring significant reductions in noise.

'So, what d'you think?' I asked my pal Steve, somewhat more agile than me, who had shinned up the pole to fit the now spinning blades.

He looked disappointed. 'No quieter than mine, I'd say,' he replied apologetically.

I hadn't the heart to tell him that the noise we were hearing was actually his wind generator – three boats away along the raft. From the Superwind came just a gentle whirring. PBO

The Superwind wind turbine features redesigned blades with tiny, raised chevrons to generate micro-vortices

■ Yacht surveyor and designer Andrew Simpson cruises the Ionian with his wife Chele in his own-design 11.9m (39ft) yacht *Shindig*