



No-power steering

Windvane self-steering is still popular on ocean cruisers, despite the march of technology, reports Elaine Bunting. Mike Owen takes a look at the products on the market, the pros and cons and how suitable they are for different sizes of boat, and we check up on how they performed in our annual ARC transatlantic gear survey



After windvane self-steering was adopted and developed by Blondie Haslar for the Observer Single-handed Transatlantic Races (OSTAR) in the 1950s, it became a staple on serious ocean cruisers. It made possible some of the great solo circumnavigations, such as those of Francis Chichester and Alex Rose, and soon a windvane mounted on the stern became the badge of a yacht destined for great adventures.

As modern electronic autopilots have improved, wind self-steering has fallen into a minority choice. There are some good reasons why, such as inefficiency in lighter winds and a structure that monopolises a good portion of your transom scoop or bathing area. But there are also benefits to

this equipment that autopilots cannot match. The most important of all are: they use no power and they are generally very robust and reliable.

The power saving is a huge consideration. An autopilot switched on for 20 hours a day (as it could well be during an ocean crossing) could consume 60ah. Generating sufficient power is the No 1 concern of all cruising sailors, as we observe every year at the Atlantic Rally for Cruisers (ARC). If you cut out an autopilot, and perhaps one or two other heavy draining items, you can wind back the power spiral, do without a generator, save on fuel and engine servicing, the big and expensive battery banks and charging systems, and scale way back the knock-on expenses.

▲ **Above:**
a Hydrovane being used on a larger, modern hull form yacht. This type is popular because control lines do not need to be led into the cockpit

Its reliability also makes wind self-steering gear a huge boon for many short-handed crews, especially couples sailing together – an autopilot failure on passage can push a couple to the limits of their endurance.

This is why wind self-steering is still fitted to a sizeable 10-15 per cent of the ARC fleet most years – as revealed in our annual gear survey of rally skippers. If you take ocean passagemaking yachts as a whole, the percentage may well be a bit higher.

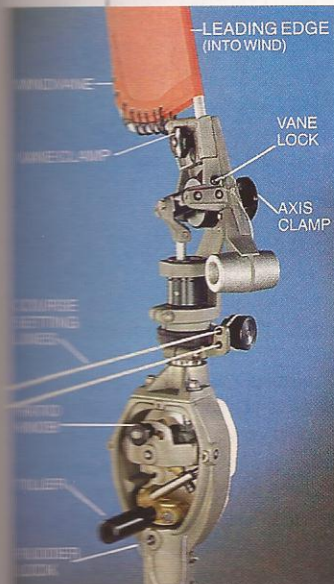
So although this is 'old' technology, it's hard to see this tried and tested equipment ever fading away completely and, as we see on the following pages, there is plenty of choice on the market for buyers.

HOW WINDVANE SELF-STEERING WORKS

The prime difference in types of gear is whether the windvane's main rotation is through a vertical or horizontal plane, and whether steering is achieved via the gear's own rudder alone (auxiliary rudder systems), the yacht's main rudder (servo pendulum systems), or a combination of the two (dual rudder systems).

We'll focus on the principles of the more common units used in the Atlantic Rally for Cruisers. In all systems the boat needs to be trimmed and balanced before engaging the vane gear. The system then reacts to variation in wind flow (direction) across the vane. Control lines and methods vary, but once the system is set for a particular course it can be tweaked and reset for a new heading – some systems are fiddlier than others.

Hydrovane mechanism



AUXILIARY RUDDER SYSTEM

The Hydrovane, the most widely adopted equipment in the ARC, is an auxiliary rudder system with a horizontal vane. The top vane is hinged at its base such that when wind flow changes across its face – owing to windshift or course error – the forces tip the vane to one side or the other.

That movement is transmitted via a gearing system (linkage) to turn the auxiliary rudder. As course to wind corrects, vane and rudder centre until the next correction (impulse).

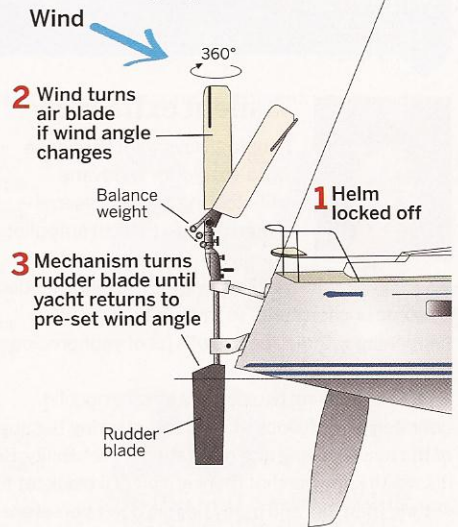
Advantages

- ▶ No control lines led into cockpit, so suitable for centre cockpit yachts
- ▶ Can work as an independent emergency rudder

Disadvantages

- ▶ Rudder may be too small for large yachts

Auxiliary rudder system eg Hydrovane



SERVO PENDULUM SYSTEM

The Monitor, Neptune and Windpilot Pacific units used in the ARC are servo pendulum systems. These have horizontal vanes where the lateral movement of the vane is again transmitted via a linkage to the system's rudder below.

This rudder, however, is not the steering device. When on course, it hangs vertically, but when the windvane turns, the rudder paddle turns also but, as it is hinged laterally to swing like a pendulum from side to side, the increasing pressure of the water flow forces the blade out further to one side. This energy is transmitted via control lines led back to the tiller or wheel steering to correct course via the yacht's main rudder.

On course again, the rudder-paddle reverts to a central position. The better systems incorporate bevel gearing with step down ratio to limit steering force and assist yaw damping.

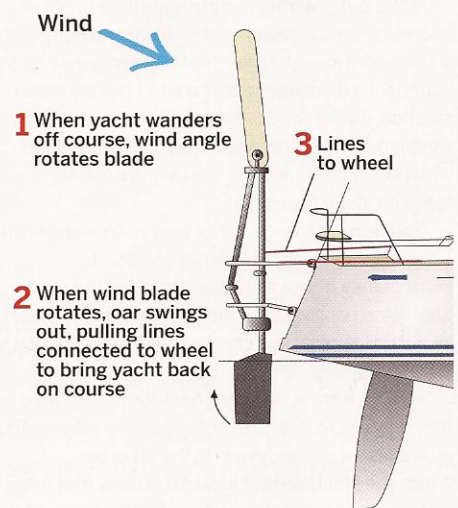
Advantages

- ▶ Strong steering system
- ▶ Can be used on yachts up to 60ft
- ▶ Uses yacht's own rudder

Disadvantages

- ▶ Lines need to be led to cockpit

Servo pendulum system eg Monitor



DUAL RUDDER SYSTEM

A dual rudder system such as the single Windpilot Pacific Plus deployed in the 2011 ARC, combines the benefits of a strong servo pendulum system with an auxiliary rudder independent of the yacht's main steering system.

As with the auxiliary rudder, before engaging the system, the yacht is trimmed and balanced, and the main rudder locked to counter weather helm. The windvane steering then makes fine, controlled corrections. This is particularly suited to craft otherwise too hefty for effective single auxiliary rudder systems, or where control line pathways are too long and too friction-bound to be effective, eg bigger, centre cockpit boats.

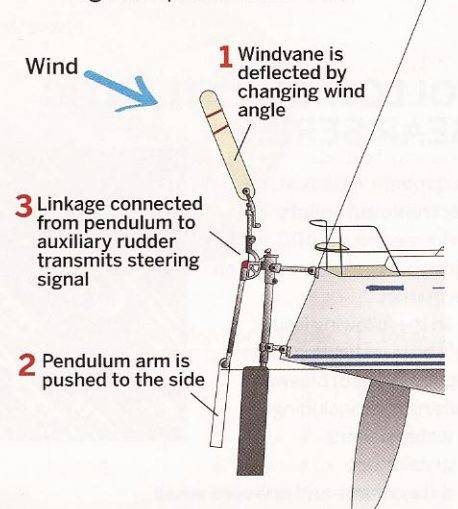
Advantages

- ▶ No control lines, so suitable for larger and centre cockpit boats
- ▶ Provides emergency steering

Disadvantages

- ▶ When deployed the steering oar protrudes further aft than other systems

Dual rudder system eg Windpilot Pacific Plus



GEAR FOCUS: WINDVANE SELF-STEERING

MY VIEW ELAINE BUNTING



A silent extra crew

People always want to use the word 'magic' for windvane self-steering and so it seems – much more so than an autopilot. The sight of the mechanism

working away is like being guided by some unseen hand. To think that this is all happening without the use of a jot of your precious power is a joyful feeling.

If I were sailing two-up for a long period, I'd definitely want to look at wind self-steering because of the power saving and reputation for reliability. But it's worth knowing that there is a bit of a black art to setting them up, and many people don't persevere long enough to get the knack. With a full crew, it's rare for anyone other than the skipper to know its ways, which means that every time the wind shifts he or she has to be called.

Wind self-steering can struggle to activate or counteract the rudder in light winds so pairing with an autopilot, one that you could under-spec a bit for your boat's displacement, is a good and common solution. As the wind becomes stronger, however, windvanes get better and better and at the point when autopilots can struggle they are usually romping along beautifully.

You do have to watch that they don't wander off course by following a windshift you don't immediately notice, especially inshore, but on a downwind passage they are not likely (in contrast to an autopilot in normal compass mode) to put you in danger of an accidental gybe.

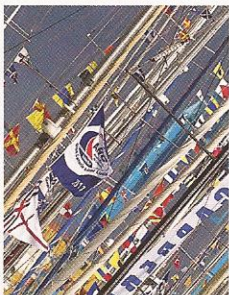
For me, a great advantage seldom mentioned is that they are so quiet. An autopilot linear drive often grumbles away annoyingly in the aft cabin. Windvanes feel like that ideal extra crew that never sleeps, eats or complains. If you think one might be for you, I'd recommend a test drive in a boat with one fitted so you can experience the different feeling it gives from an autopilot.

FOLLOW OUR ATLANTIC GEAR SERIES

Next month we look at how **electronic autopilots** performed on the ARC and bring you a guide to what's on the market.

In the following issues we'll be investigating other popular items of bluewater cruising gear, including:

- ▶ **watermakers**
- ▶ **generators**
- ▶ **data comms and onboard email**
- ▶ **downwind sail combinations used on the Atlantic**



MONITOR

In ARC 2011 fitted to: Island Packet 45, Westerly Oceanranger

The servo pendulum Monitor is manufactured by Scanmar, which also produce the auxiliary rudder Auto-Helm, vertical windvane Saye's rig and emergency rudders. Monitor is a long-standing, well-proven and updated product, and ARC skippers' comments mostly centred on 'superb'. The owner of a Westerly Oceanranger switched from Hydrovane following gear failure on a previous crossing.

Overcoming the issue of bathing platforms and ladders, Scanmar have a SwingGate solution – at extra cost (and extra bulk). The clue is in the name. No boats used this in the ARC last year, but it may offer a more suitable option. The Monitor is easily removed.

Special features include stainless steel main assembly and rudder plus a conversion kit for emergency steering. Thousands of units have been installed, so custom fitting of the four-point mounting system is made simple.

Price ex tax from US\$4,495 (£2,894)
www.selfsteer.com



WINDPILOT

In ARC 2011 fitted to: Contest 48CS, Hero 101, Lerouge Pulsar 50, Ovni 36

There were two product types used in the ARC from Windpilot: the Pacific servo pendulum and Pacific Plus dual rudder system. All were die-cast aluminium and the latter incorporated both the servo pendulum and dedicated auxiliary rudder.

Skippers' comments spanned 'OK' to 'superb', this last from the skipper of a Hero 101 whose unit actually fell off halfway across the Atlantic. The mounting may have failed, but the owner was still highly impressed, a powerful endorsement.

And it has to be said that Windpilot's reputation is better than good. To his credit company owner Peter Förthmann has also produced a respected, pretty much unbiased textbook called *Self-Steering Under Sail* (download free from website below).

Windpilot systems are well engineered to custom order and, having fitted thousands of units, drawings generally pre-exist, including through-bathing platform solutions. An extra optional SOS rudder can be fitted for emergency steering capability.

Control lines occupy just one side of the cockpit, which is much less restrictive than twin-sided arrangements. Turning blocks are reduced to four from the conventional eight to ten, reducing friction and improving light wind performance.

Price ex VAT from €2,850 (smaller Pacific Light from €1,740). www.windpilot.com



NEPTUNE

Fitted to: Starlight 35

Just one unit in this ARC, with the comment: 'Very useful, but subject to the limitations of this system'. The suggestion was that it was also a little more complicated than others in use, perhaps, for example, because it employs a mini crank handle rather than an endless remote control line for fine course adjustment. The Neptune, though, is engineered to a high standard, it seems, and sells in reasonable numbers.

Price ex VAT from £1,390.
www.windvane.co.uk



HYDROVANE

In ARC 2011 fitted to: Bowman 48, Gib'Sea 43, Hallberg-Rassy 36, Hallberg-Rassy 42E, Hylas 44, Najad 405, Ovni 445, Ovni385, Rustler 36, Rustler 44, Southerly 135, Swan 46 MKII, Warrior 40.

The most popular system used in ARC 2011, the Hydrovane, with its auxiliary rudder system, is compact and offers optional off-centre installation, leaving bathing platforms and ladders free. The system also requires none of the control lines that constrict the cockpit.

Technically, Hydrovane is well designed for its purpose, with a large, light windvane to improve performance in lighter winds, a relatively large rudder and a simple three-gear reduction control for optimal sensitivity of response in varying conditions.

The marketing message is strong on simplicity and effectiveness, and ARC user comments largely support this. As always in our survey, there were some extreme experiences. For instance the skipper of a Gib'Sea 43 reported: 'Superb - 95 per cent of crossing was done by Hydrovane', but a Hallberg-Rassy 36 skipper remarked: 'Useless - didn't work downwind, needed approx 40° course offwind.' On the other hand, the skipper of a Hylas 44 said: 'Great downwind in medium winds, needs help at other times.' The question remains: were all given a good test for optimum performance before the crossing?

Well suited to boats up to 50ft and some beyond.

Price ex VAT from £3,250.
www.hydrovane.com



ARC SURVEY 2011 RESULTS



The world's largest independent survey of marine equipment

Yachting World's unique annual Atlantic Gear Survey has become an invaluable resource for owners equipping their boats for future passages and ocean crossings.

Since 2000 we have collated data from the 200-plus skippers who make the annual pilgrimage across the Atlantic Ocean - equating to over six million sea miles of ocean sailing. A wide range of equipment has been tried, tested and rated to form the most comprehensive and unbiased survey of marine gear in the world.

Over the next six months our series of Gear Focus features will explore the equipment carried on these ocean crossings, how it works and what is available on the market - and will be backed up by the results from our unique Atlantic Gear Survey.

217

skippers responded to our survey

20

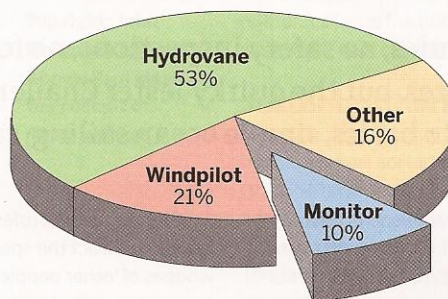
yachts carried windvane self-steering, as follows:

Hydrovane	13*
Windpilot	4
Monitor	2
Neptune	1

*In the 2011 ARC gear survey there wasn't a broad enough spread of types of windvane self-steering gear for individual product scores to be statistically significant. However, if we look back at the data results from the past few years of our ARC surveys, we can see that Hydrovane's auxiliary rudder system has been the most popular. We've noted that it has also consistently rated lower in the scores for reliability, ease of use and value for money.

Windpilot models, however, which were carried by one in five of the windvane steering users surveyed, have, on average, received the most favourable ratings and feedback.

Vane steering gear
Percentage over four years



Year	Survey No	Hydrovane	Windpilot	Monitor	Other	Total
2008	205	21	6	4	6	37
2009	196	11	9	2	9	31
2010	220	20	6	4	4	34
2011	217	13	4	2	1	20