THREE HULLS ONE PLANET

A SWISS SAILOR AND ORGANIC FARMER HAS CUSTOMISED HIS NEEL 51 TO PROVE THAT BOATS CAN BE COMPLETELY SELF-SUSTAINING. **SAM FORTESCUE** REPORTS

Photos by Wolf

Plans for sustainable sailing include growing crops on board as well as making use of zero carbon renewable energy

Wolf chose a Neel 51 trimaran for speed and comfort

Bluewater sailing stories usually start with someone who has been around boats all their life. But not this one. A Swiss man who goes only by the name 'Wolf' freely admits he came late to the sailing party when he started to spec out a new Neel 51 trimaran in 2016.

"I came to the boating world in an accident of life after a medical problem that made me think about how to spend the rest of my life," he tells me before listing his new aspirations. "The first one was living on a boat, like a child's dream."

Coming to boat ownership without any of the preconceptions or traditional constraints that inform many of our choices, Wolf knew straight away that he wanted a multihull. "I wanted a fast and comfortable boat," he says. But he also wanted something a bit more than that. "I wanted autonomy and environmental sustainability."

This is where Wolf's story takes a really interesting turn, because he wasn't prepared to settle for standard 'greening' measures such as synthetic teak decks or a few solar panels. "Usually with boats, your life is based on a diesel engine. I thought 'I'm not prepared to be dependent on fossil fuels'."

So he looked at the design of a boat's systems in a fundamental way to determine how he could live aboard with the lowest possible carbon footprint. It led him to develop his own straightforward solutions to harvesting fresh water, electric propulsion, growing food on board and managing waste – all interconnected.

"I didn't want to do a concept boat, just one that I agreed with and understood," he says. Now he wants to use his experience to prove to boatbuilders and other sailors that boating doesn't have to pollute.

GOING ELECTRIC

The first thing was to install an alternative to the standard 75hp Volvo engine of the Neel 51. "An electric motor seemed to be promising because I could also produce that energy as I went along," Wolf says.

After some research, he decided to install a 50kW Deep Blue electric motor from Torqeedo to drive the boat, hooked up to six i8 lithium batteries, each containing 10kWh of energy. These batteries have their own dedicated shelves in the mechanical space usually given over to the diesel engine.

As is possible with all electric drives, the prop can generate electricity as the boat sails to recharge the ›

Corridors between cabins have built-in troughs that are lined with plastic

Troughs are then filled with a lightweight soil growing medium

Lettuce, radish, herbs, courgettes and tomatoes can be grown

Button-down covers reflect light and help keep soil in place around the plants

From boat garden to galley... produce doesn't have to travel far

Noos is novice sailor Wolf's first yacht

batteries and run house loads, like the induction hob, electric cooker and the instruments.

"I made some calculations and strangely it was quite easy to produce enough energy to cover all my needs. The Torqeedo system should produce 1kW at around 7-8 knots boat speed.

"It could be much more, though, so I am also considering an independent hydrogenerator that you could lift out of the water when you don't need it. This would be interesting because then there is more power available at a slower speed."

Solar panels naturally cover part of his overall power equation, with the potential to dwarf the generating capacity of the propeller. He reckons that his 3kW of flexible DAS panels glued to the coachroof can generate 6-13kWh per day and estimates his demand to be 8kWh. The final piece of the jigsaw is two wind turbines that will help charge the batteries day and night.

Getting supplies of fresh water on board is a regular chore for bluewater cruisers. Most boats will install a watermaker to free them somewhat from the tyranny of the water tank and provide peace of mind in case of unexpectedly long passages. Wolf has also put in a watermaker, a Katadyn PowerSurvivor 40E capable of producing five litres per hour. After all, he, "didn't want to make any compromise on safety on board, or on comfort. I want to live on the boat for long periods of the year."

SAVING WATER

But the watermaker is a back-up – there just in case. He tries not to use it.

"I didn't want to depend on a watermaker, because it's a very complex piece of technology," he explains. "Desalination puts brine back into the sea, which contributes to the eutrophication of the marine environment. What's more, they require a lot of energy, usually fossil fuels, reducing the range of the boat and increasing its environmental impact."

His solution was to turn to a system that has been keeping mariners in fresh water since man first took to the sea: rainwater collection. By installing a small fiddle around the edge of the coachroof, which

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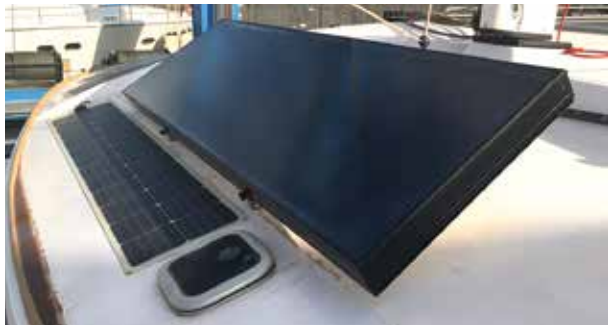
Harvesting and waste recycling systems conserve water

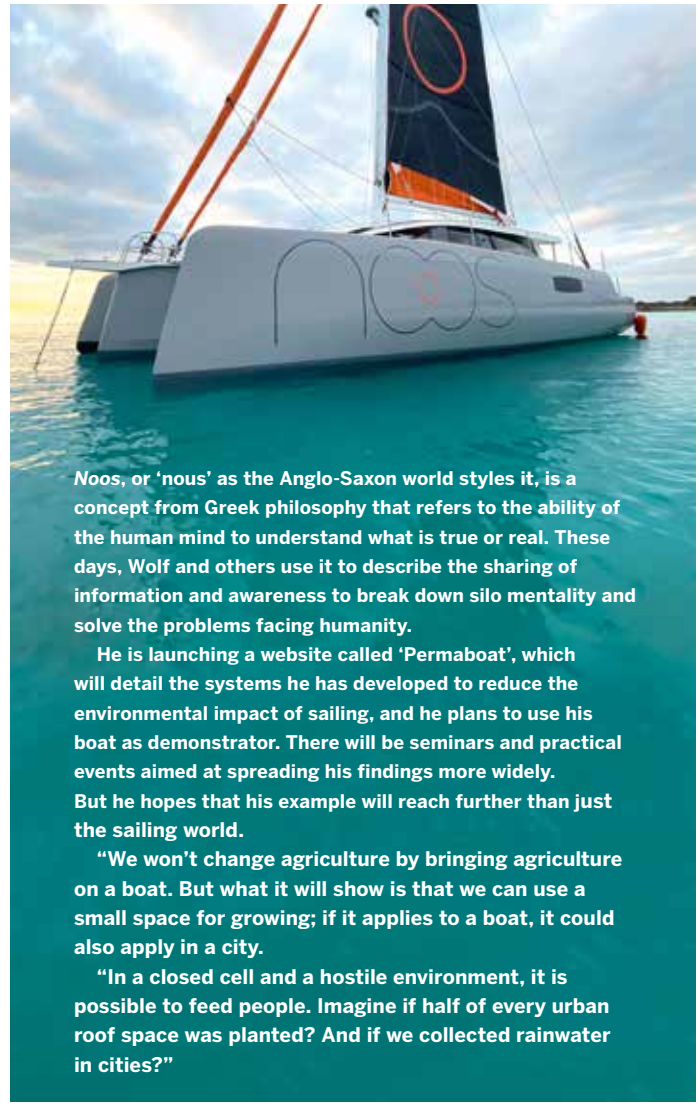
Engineroom space is mostly given over to batteries

‘In a closed cell hostile environment it is possible to feed people’



Solar panels are used for electricity and heating water, while a fiddle surrounding the coachroof collects rainwater

Neel 51 offers spacious accommodation for living aboard



***Noos*, or ‘nous’ as the Anglo-Saxon world styles it, is a concept from Greek philosophy that refers to the ability of the human mind to understand what is true or real. These days, Wolf and others use it to describe the sharing of information and awareness to break down silo mentality and solve the problems facing humanity.**

He is launching a website called ‘Permaboat’, which will detail the systems he has developed to reduce the environmental impact of sailing, and he plans to use his boat as demonstrator. There will be seminars and practical events aimed at spreading his findings more widely. But he hopes that his example will reach further than just the sailing world.

“We won’t change agriculture by bringing agriculture on a boat. But what it will show is that we can use a small space for growing; if it applies to a boat, it could also apply in a city.

“In a closed cell and a hostile environment, it is possible to feed people. Imagine if half of every urban roof space was planted? And if we collected rainwater in cities?”

drains to a central point, it is easy to collect, filter and store fresh water. By the simple expedient of rejecting the first few minutes’ worth of water, all the salt and any impurities caught by the sails or the coachroof are purged, he says. The first yard he approached just looked at him blankly when he outlined his project, but Neel was more responsive, readying the boat for all his subsequent modifications.

Wolf is an organic farmer in his other life, and also plans to grow food aboard *Noos*. He will make use of the “many wasted spaces” on the boat and apply intensive indoor growing techniques to cultivate simple greens such as lettuce, radish and herbs, as well as courgettes, tomatoes and even aubergine.

“As an organic farmer, I know it’s possible to produce quite a lot in a very small space,” he says. “My expectation is to cover the vegetable needs for four people all year round. This requires selecting the right vegetables, and always starting the next crop before the old crop is finished.”

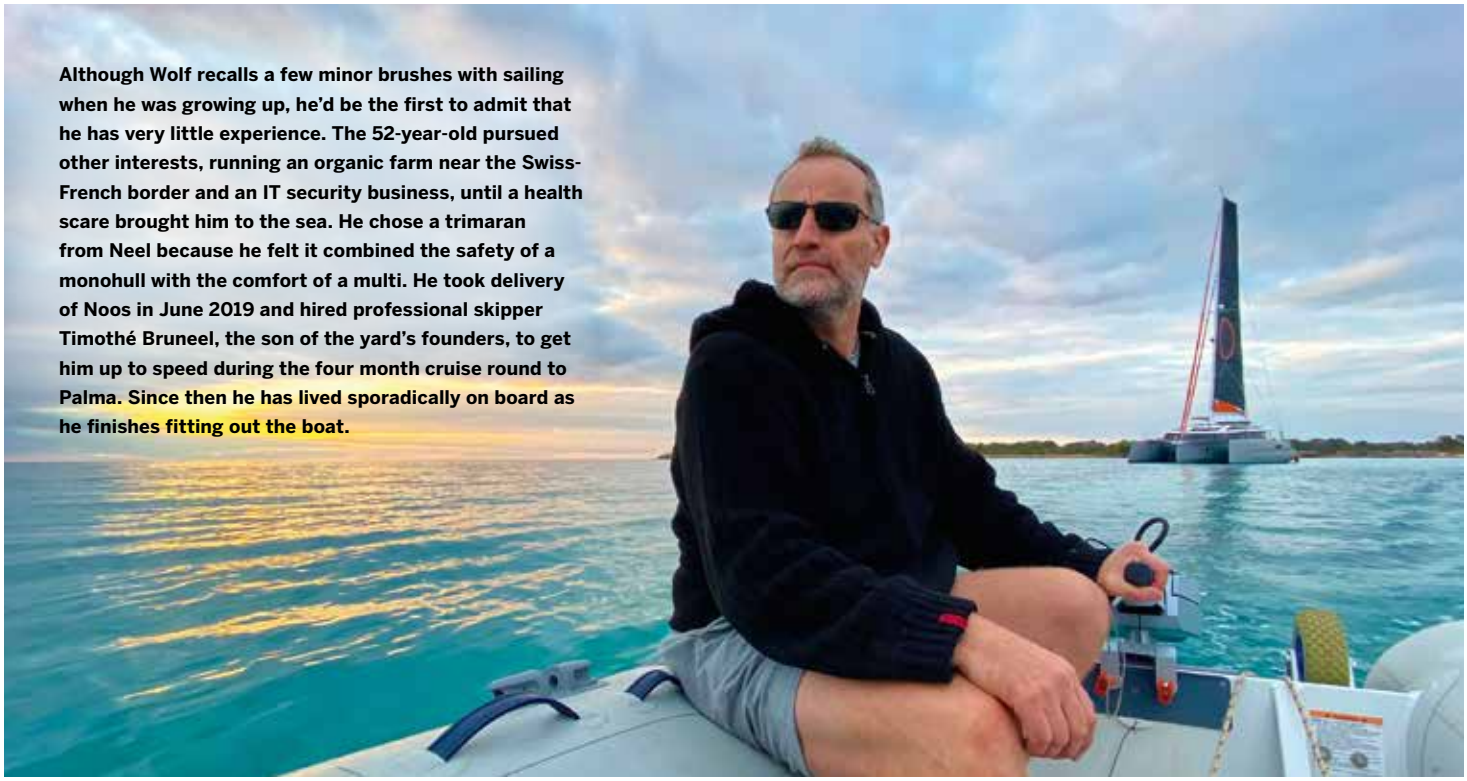
Special racks fill the corridor between the cabins, and what would normally be guest heads in the outer hulls. They are lined with a kind of plastic to keep the lightweight ‘soil’ and water in. Then a perforated fabric is buttoned over the top of the plants to stop things coming loose in rough conditions. Wolf has laid 400 litres of soil.

Some further adjustments will be necessary – such as removing the anti-UV coating on some hatches and windows, to allow the plants to photosynthesise. He plans to install some additional hatches to bring in more natural light, and top the whole system up with greenhouse-standard LED lighting as needed. The darker nooks and crannies will be perfect for growing mushrooms, he says.

WASTE DISPOSAL

Of course, boats don’t just take on supplies, they also have to get rid of waste. And here again Wolf has some novel ideas. Already a mandatory feature on superyachts, water treatment systems are a key part of *Noos*’ equipment.

By keeping so-called black water separate from other wastewater, it is possible to filter and reuse the grey water from showers and basins. This is re-circulated in a closed system that supplies the vacuum heads (which flush with just 0.2 litres), washing machine and ❯



Although Wolf recalls a few minor brushes with sailing when he was growing up, he'd be the first to admit that he has very little experience. The 52-year-old pursued other interests, running an organic farm near the Swiss-French border and an IT security business, until a health scare brought him to the sea. He chose a trimaran from Neel because he felt it combined the safety of a monohull with the comfort of a multi. He took delivery of Noos in June 2019 and hired professional skipper Timothé Bruneel, the son of the yard's founders, to get him up to speed during the four month cruise round to Palma. Since then he has lived sporadically on board as he finishes fitting out the boat.

'In the end, it may be even cheaper than a diesel-based boat'

showers – everything except for drinking water, in fact. In this way, around 75% of grey water is recycled.

All organic waste on board, whether from cooking, growing food or from the black water system, is collected in a Clivus composter containing woodchip and worms. This produces a rich humus and liquid compost, which will be applied to the growing racks as organic fertiliser. "The waste that goes overboard is biologically neutral," Wolf insists. "It can produce bad smells when the black water arrives in the composting tank, but a carbon filter solves that problem completely."

Despite all of this renewable technology and the sustainable systems, Wolf has also put in a diesel-powered generator from Torqeedo. "Its advantage is to store a great amount of energy for a long period, which can be given up instantly on demand," he admits with a sigh. "At the end it's always about security."

The aim is not to use the system at all, but he knows that may not be possible. "There may be some conditions in which you really need power and you haven't generated enough – when you have cloudy weather without wind, for instance. During two weeks off Palma de Mallorca, I didn't use the generator at all and from my calculations, I shouldn't need it. With just 4-6 hours of sailing per day, I should still be able to do 1-2 hours with electric propulsion."

For high latitude sailing, he plans to install a small Refleks-style woodburning stove. "Burning driftwood, which is abundant on many beaches, offers a source of complementary energy. Depending on where it is positioned on board, it can also be used for cooking."

THE COST OF PIONEERING

Wolf calculates that his modifications may have cost an extra €120,000 compared to a standard diesel-powered boat. But he believes that lower maintenance and almost no fuel costs will help to amortise the difference. "*Noos* is maybe the first boat to fully integrate that new approach; so let's bet on the fact that in a few years, the systems will cost a lot less and that the difference will be smaller and smaller," he says. "In the end, it may be even cheaper than a diesel-based boat."

He plans to refine his systems during the coming season in the Mediterranean, before striking out to cross the Atlantic and explore the Caribbean. And though he's fulfilling his dream of living aboard, he has a more serious purpose too: to showcase a sustainable way of sailing. It is all in line with the concept of 'noos' or awareness, which he has embraced.

"We as humanity have knowledge about everything, from particle reactions to the limits of the universe. Yet we are not able to solve some very simple issues like water and food for everyone, and an ethical society. What is missing is awareness.

"Noos means rationality, intelligence. The boat is a materialisation of that concept." ■