



Running a Serial Electric Hybrid Narrowboat for Hire

A talk by Catherine Armstrong

MD Cafwin Cruises Narrowboat Holidays Ltd



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Meet Ollie Owl





Ollie Owl - a 58.6ft Semi-Trad Electric Serial Hybrid NB - Built by Ortomarine

- Ollie Owl started life as a diesel narrowboat.
- Conversion to Serial Electric cost Ortomarine in the region of £40K.
 - Retro fitting was far more difficult and expensive than anticipated and there were numerous problems purchasing the electrical circuit boards required – due to it being the height of COVID.
- Ortomarine were under huge pressure to convert Ollie Owl over the winter months of 21/22 as I needed the boat for the hire season starting Mar 2022.



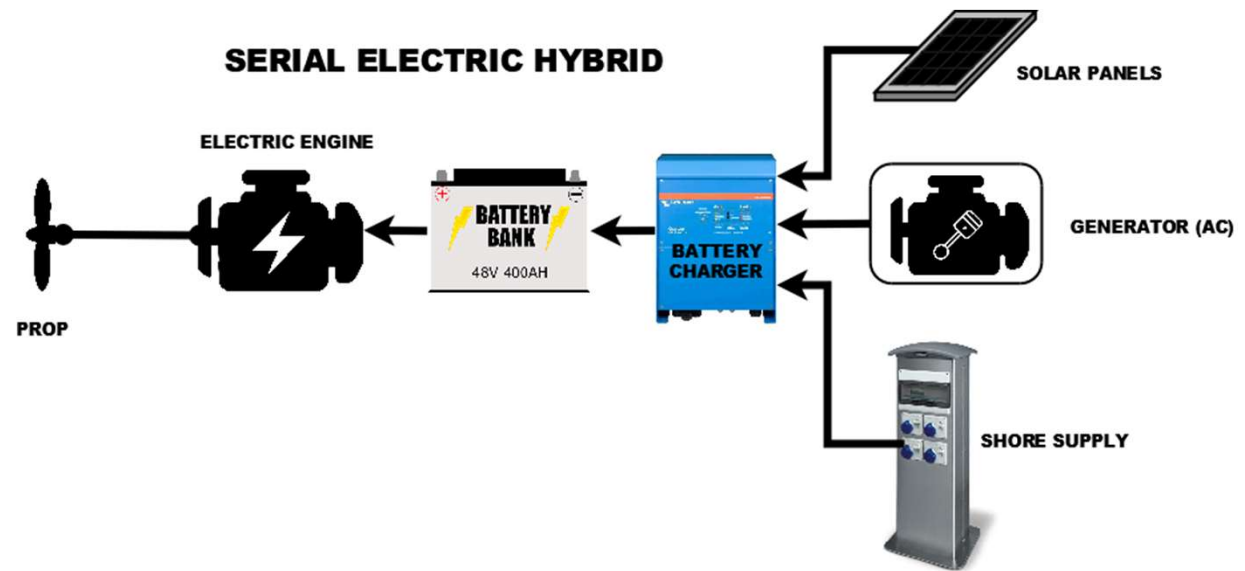
Ollie's Electrical Systems

- A 12v DC battery system. The 12v circuit supports the boat's software and control systems. It has its own batteries and supports little of the domestic system.
- A 24v DC and a 230 AC circuit. These circuits are supported by 4 lithium batteries with a 400 Amp Hour capacity. All the 3-pin plugs, the microwave, refrigerator, and the freezer run off the 230v circuit. The remainder of the appliances and lights work on the 24v DC circuit.
- Water Heating. The water is heated by the cabin heating system, the cooling system for the generator and an internal heating coil.



Electric Serial Hybrid - Understanding Ollie Owl

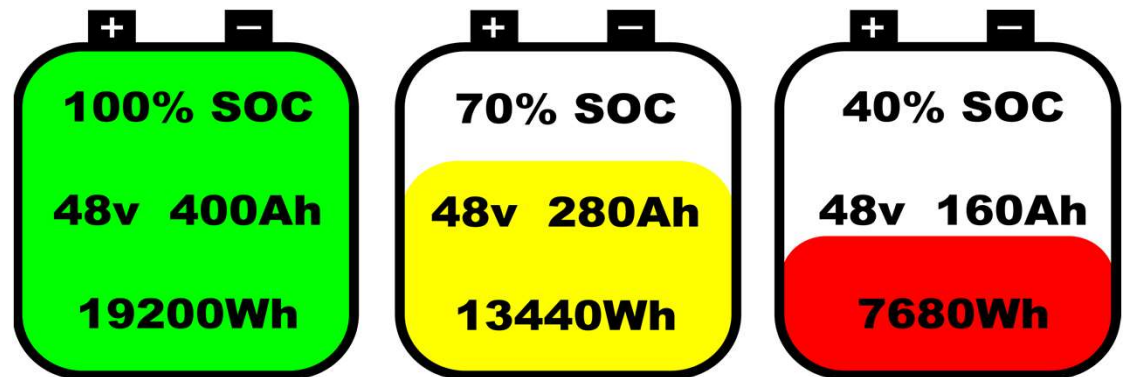
- Ollie's propellor is turned by the electric engine.
- The 4 lithium batteries provide enough, but not an unlimited battery bank.
- Whilst cruising, the battery bank can only be charged by the generator or solar.
- Even in the summer, the solar cannot provide all of your required energy.





Using the Power Wisely! - Conservation versus Generation

- The engine is the largest consumer of power and the faster the driver goes, the more battery power is used.



Battery SOC = State of Charge

- After the engine, the water heater and any 240v AC mains equipment are the next biggest consumers.
- The diesel generator is the safety net, and is programmed to turn on automatically when the batteries reach 60% SOC.



Different Approach to Teaching Guests

Minimising the environmental impact

- Like electric cars, electric boats have an optimum speed for maximum efficiency. Ollie's most efficient speed is between 2 and 2.5 MPH and at this speed the engine should be consuming between 1.5 and 2.5kW.
- Also like cars, accelerating too quickly, will use more power than necessary.
- Use the engine KW display to monitor performance rather than MPH.
- Shallow water and debris around the propellor can both negatively increase power consumption.



Big Brother is
watching!

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CIN:GB-ORTTW022H919

CRT Index: 527059



Powered By



Ollie Owl

Cafwin Cruises

NARROWBOAT HOLIDAYS

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Ollie Owl 11/04/24 THU 15:01     

Ollie Owl



Status



Heating



Power



Generator



Cruise



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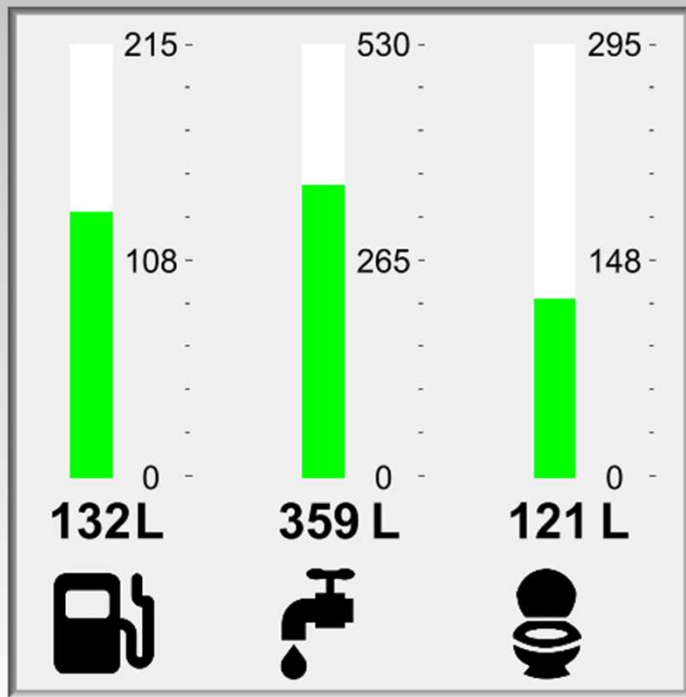
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Status

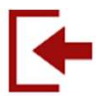


Cruise

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i Boost 60 min

i Timed

i Boost

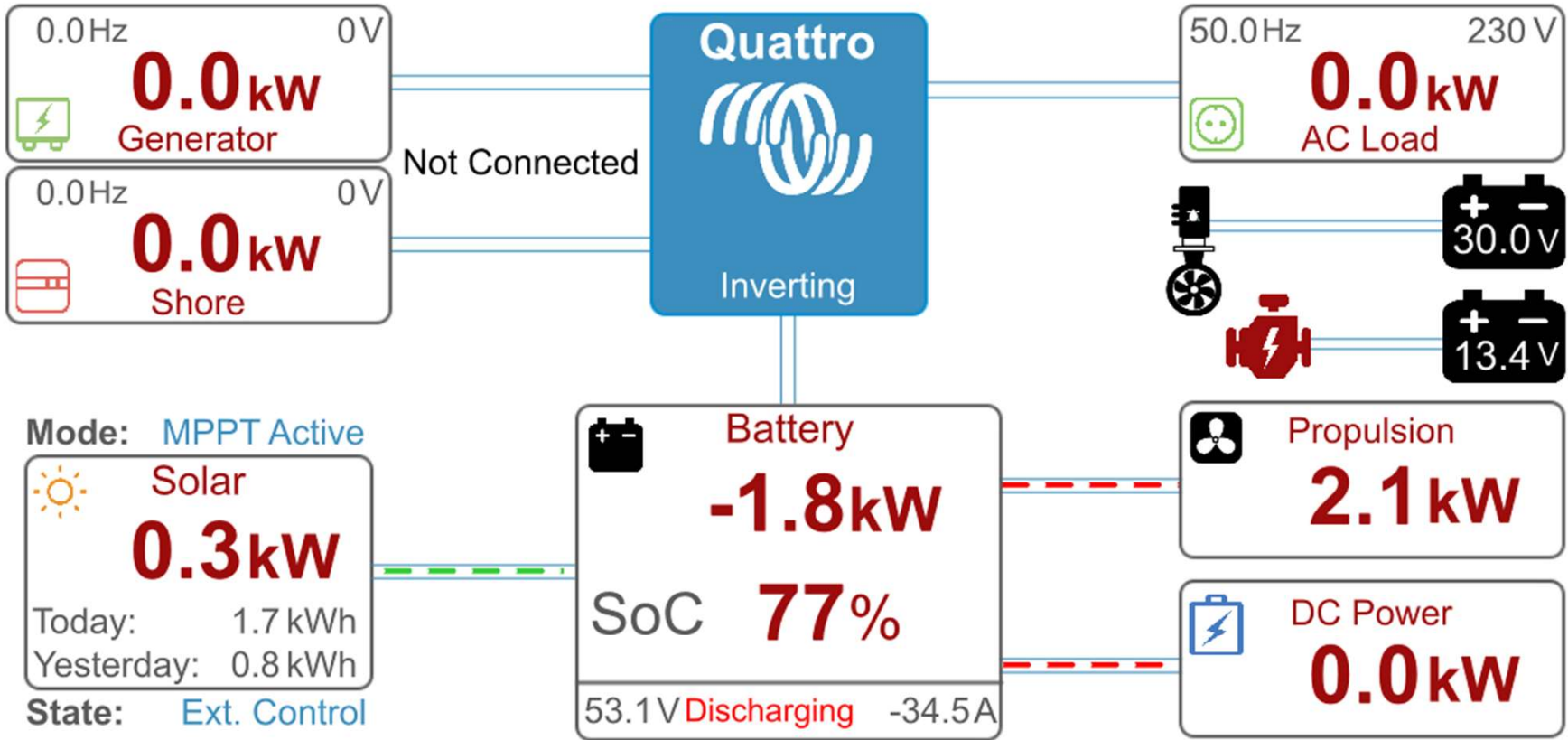
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Ollie Owl



Status





Generator

Top-Up

Pause



Cruise

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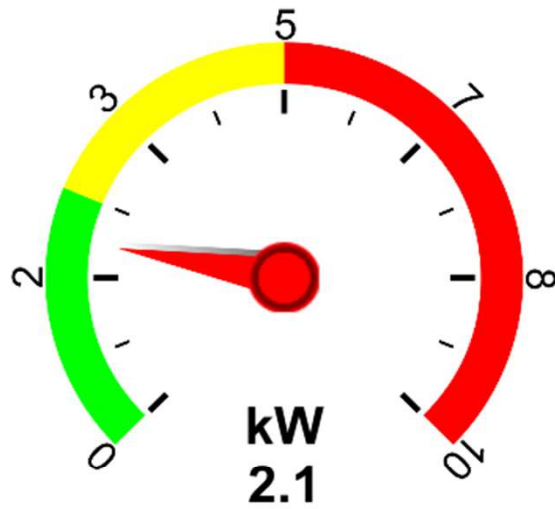


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Tips for Greener Living

Maximising power conservation

- When mooring, at lunch time or at the end of the day, guests need to look for moorings with a clear view of the sky to get maximum solar yield.
- They need to keep ropes and other items off the solar panels, as shading on the panels will reduce the solar yield.
 - If buying an electric boat, really think about the placement of your solar panels as it makes a huge difference as to where you keep things like your boat pole/hook and gang plank.



Year 1 – a Few Tweaks Required

- The inverter was not initially powerful enough for the generator.....

Hence the generator did not work efficiently. We changed it!

- The raw Water Cooling System for the generator was inefficient especially in the Autumn months. We changed it!
- Bow Thrusters failed a number of times – manufacture known joy stick issue and replaced under warranty.
- Computer screen needed to be refined further for guest use.

Very few problems since making the tweaks – wholly reliable



Fuel Comparison

Year	Ollie	Arthur
2022	£1264	£2714

Ollie used 53.5% less fuel than Arthur

2023	£666	£1542
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Ollie used 57% less fuel than Arthur



Would I recommend other hire companies
going green?

Would I recommend a retro electric hybrid fit to your
diesel boat?

Absolutely Yes to bothbut



Considerations

- You need a company with an absolute proven track record with electric boats to provide your vessel, or the right company selling the electrical package set-up to the boat builder.
- You will need a good maintenance contract agreed with the software provider or:
 - A really high level of know-how of computer software yourself!
 - It's unlikely your regular engineer will be able to fix any computer software issues.



For the Guests

Silence is Golden

As a hirer of an electric narrowboat, guests will experience...

- Near Silent Cruising
- Fume free operation
- A real interest from other canal users
- A closer interaction with nature
- Fishermen love us!
- The satisfaction of knowing that they are making a difference

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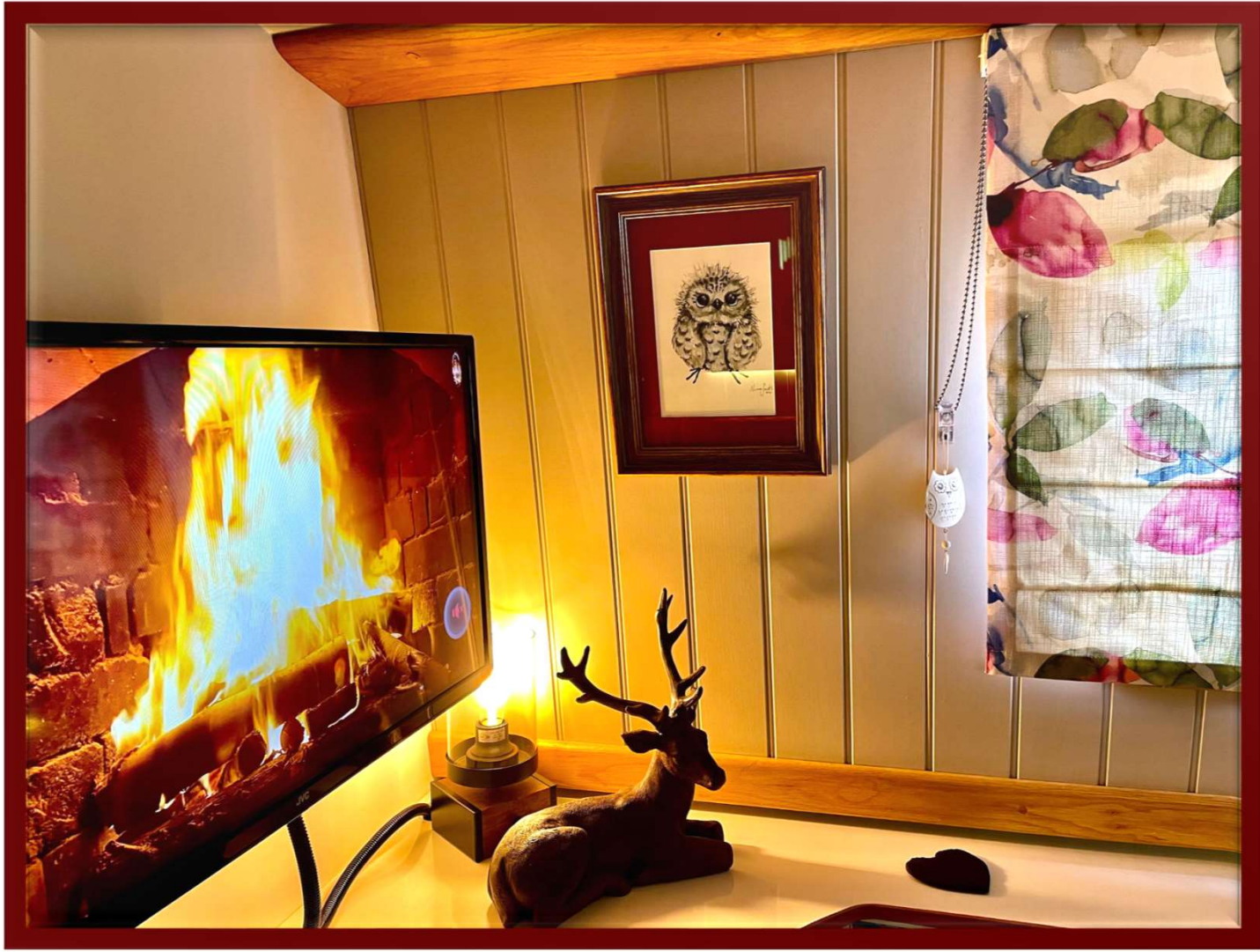


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Meet Arthur Owl





Arthur Owl

- Would I have Arthur Owl converted from Diesel to Electric Hybrid?

• **100% I would!**



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Questions?

