



OCEANVOLT

HighPower ServoProp 25

**HighPower
ServoProp 25**

 **DAME**

NOMINATED
2023

OCEANVOLT HIGHPOWER SERVOPROP 25

The patented 48 V **Oceanvolt HighPower ServoProp 25 (HPSP 25)** featuring a **controllable pitch propeller** combines a **high-efficiency saildrive** with the **most powerful hydrogenerator** on the market. One of the unique features of the HighPower ServoProp is the capability of the **propeller blades to rotate 360 degrees**, allowing for ultimate **efficiency in both propulsion and electricity generation**.

Entirely designed and manufactured by Oceanvolt in Finland, this groundbreaking technology redefines the possibilities of sustainable yachting as the powerful hydrogeneration feature is capable of making the yacht **energy self-sufficient**. With the **instant power** and **impressive thrust in both forward and reverse**, it makes for excellent control of the boat even in harsh conditions.

The HPSP **can also be installed** with the **propeller facing forwards or backwards**. Mounting a saildrive leg with the propeller facing forwards increases the efficiency of both hydrogeneration, and also propulsion. Traditionally, saildrives are mounted with the propeller facing backwards, to allow for folding propellers and interior space management with large diesel engines. This however reduces the efficiency of the system.

OCEANVOLT HIGHPOWER SERVOPROP 25

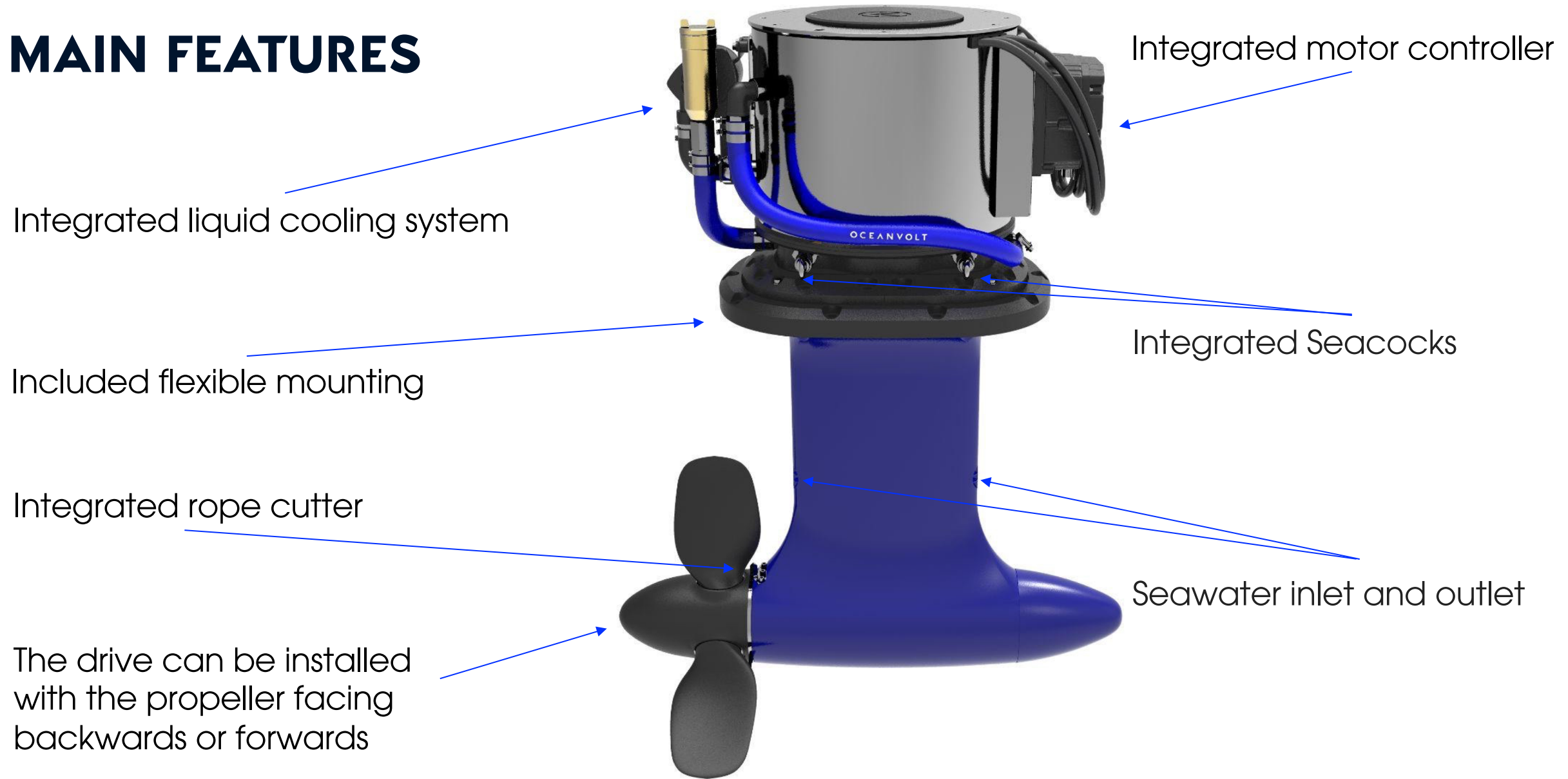
The design of the propulsion unit is **compact** and **highly integrated** as the **motor controller, propeller blade control, and complete liquid cooling** system are **built into** the unit. In addition to being **smaller** and **lighter than a comparable combustion system**, there is **no need for additional seawater inlets or outlets**, reducing overall risk, drag and failure points.

Another advantage comes from not needing any exhaust system or fuel system, so with only a few cables to connect, **planning and installing** the system is **straightforward and simple**.

The HPSP is **suitable as a propulsion motor** for boats up to **70 ft** in length and weighing up to **25 tons**. It can also be used as a hydrogenerator in substantially larger vessels.



MAIN FEATURES



**30KW
MOTOR**

Suitable
for 45-70ft
sailboats.

**SAFE
48V**

System powered by a
safe, low voltage (48
Vdc) battery pack.

**SUPERIOR
HYDRO
GENERATION**

5kW at 10
knots.

**360
DEGREES**

Controllable pitch propeller.
Propeller blades rotate 360°.
Ultimate efficiency in propulsion
and electricity generation.

**FULLY
INTEGRATED**

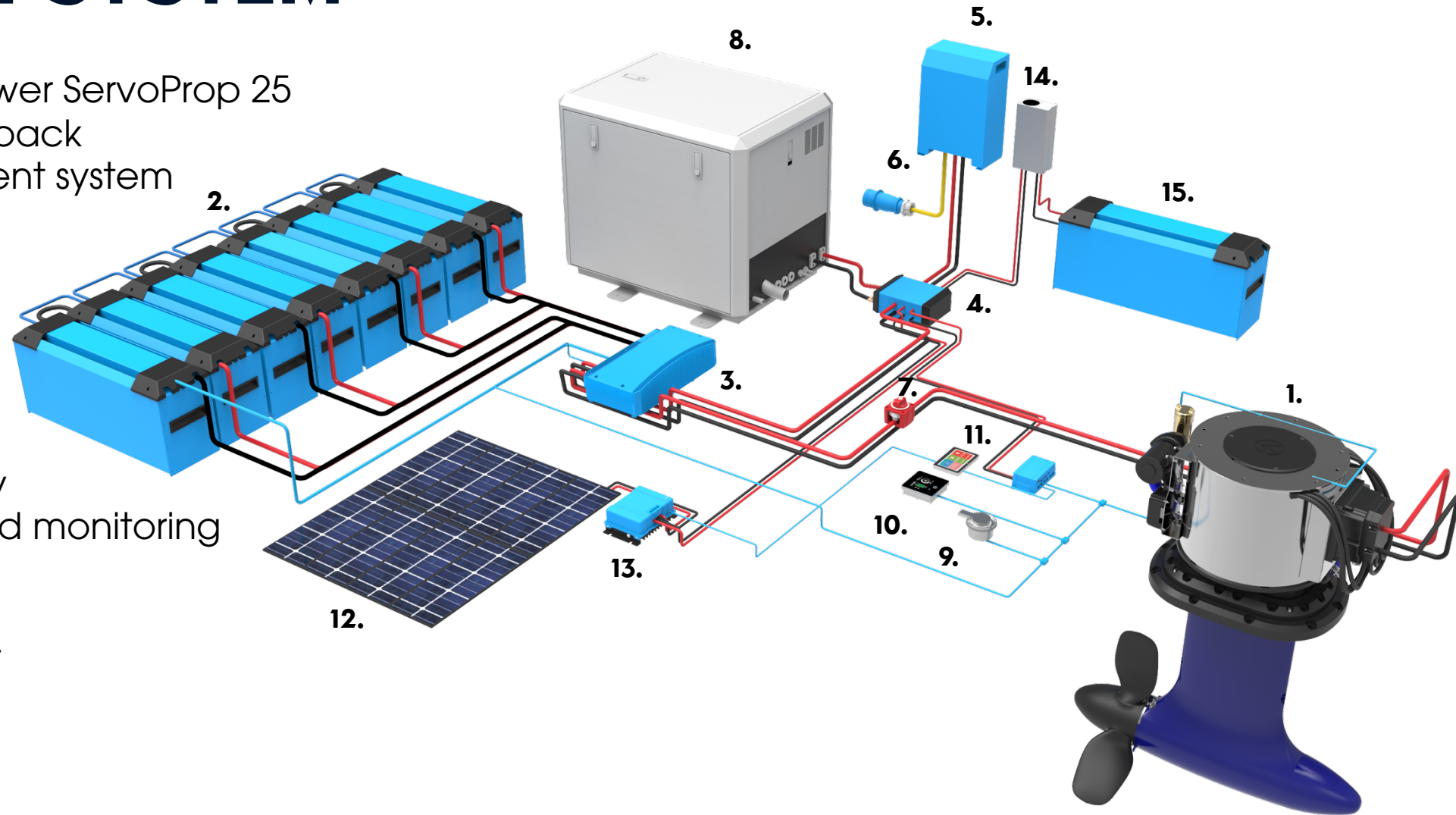
Compact and installation friendly
design; motor controller and liquid
cooling system integrated to the unit.
Significant weight and space savings.

SYSTEM & PERFORMANCE



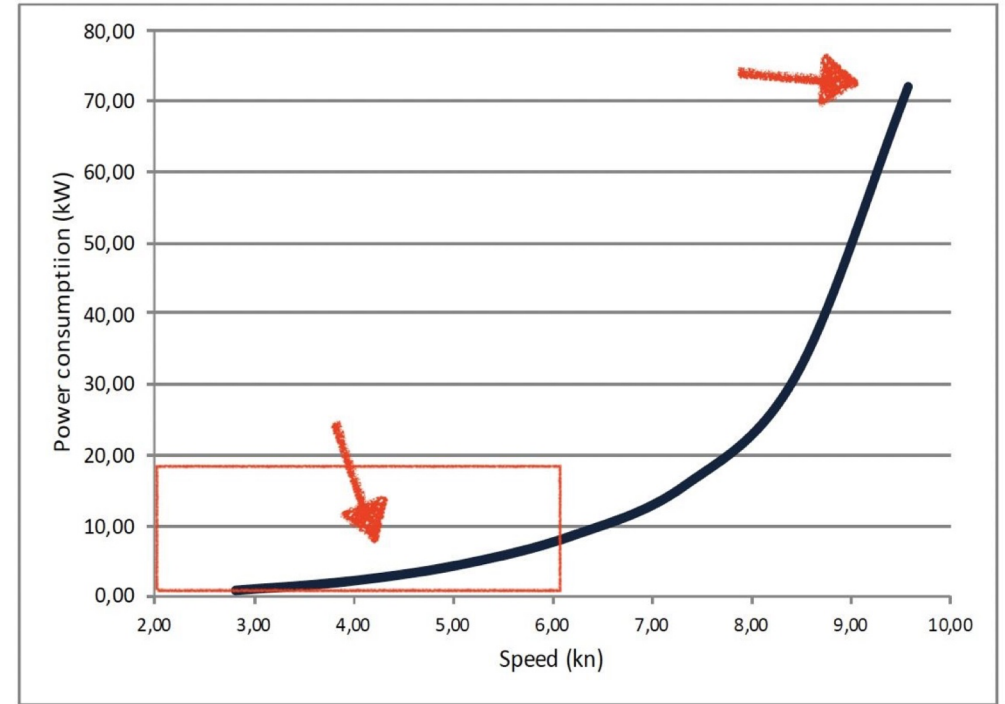
COMPLETE SYSTEM

1. Oceanvolt HighPower ServoProp 25
2. Propulsion battery pack
3. Battery management system
4. Bus bar
5. Charger/Inverter
6. Shore power input
7. Main switch
8. DC Generator
9. Control lever
10. Oceanvolt display
11. System control and monitoring
12. Solar panels
13. Solar charger
14. DC/DC Converter
15. House battery



HP VS KW DISCUSSION

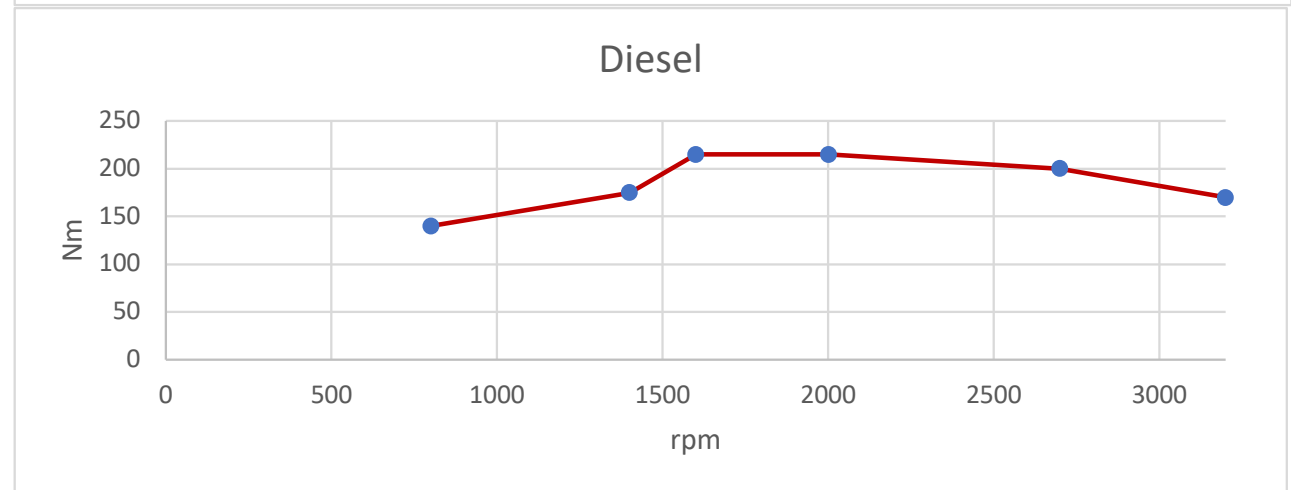
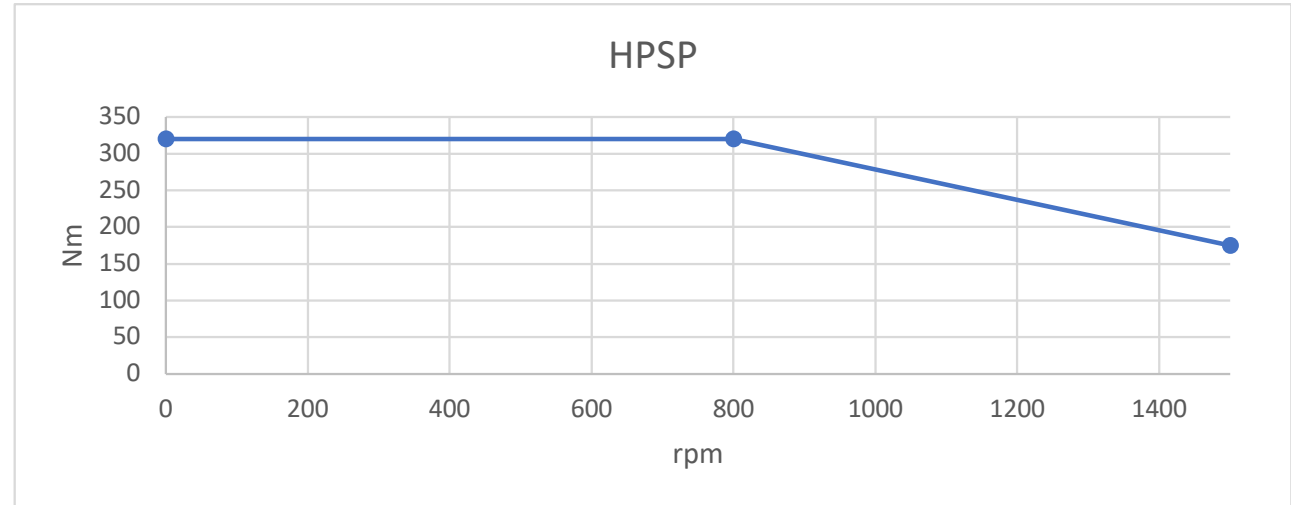
- Most boat builders use 4 kW per ton as a guideline
- With Oceanvolt the recommendation is 1,25 kW/t to max 2 kW/t
 - This is because it is torque that is moving the boat, not power
 - Therefore we calculate 2,5-3hp/kW instead of the standard 1,34hp/kW
- How much does the hull require power?
 - Because the torque is instant with electric motors, it does not require excess horsepower to produce torque quicker



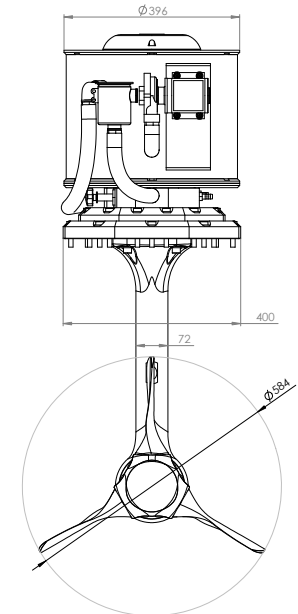
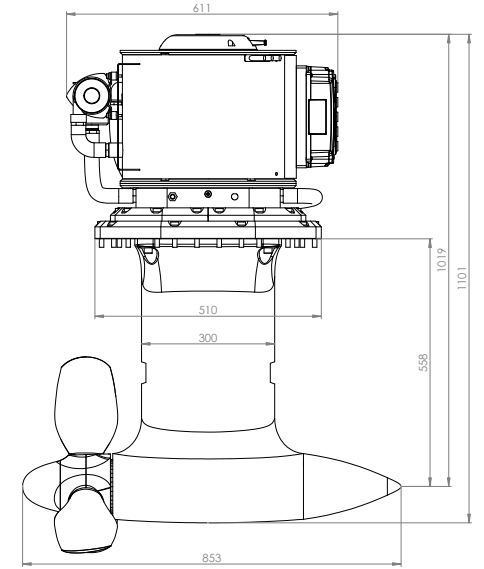
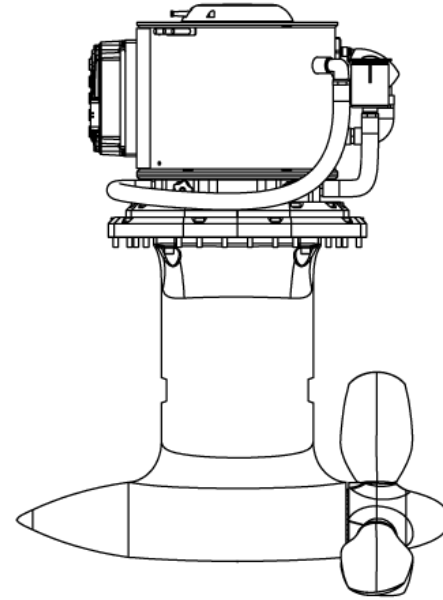
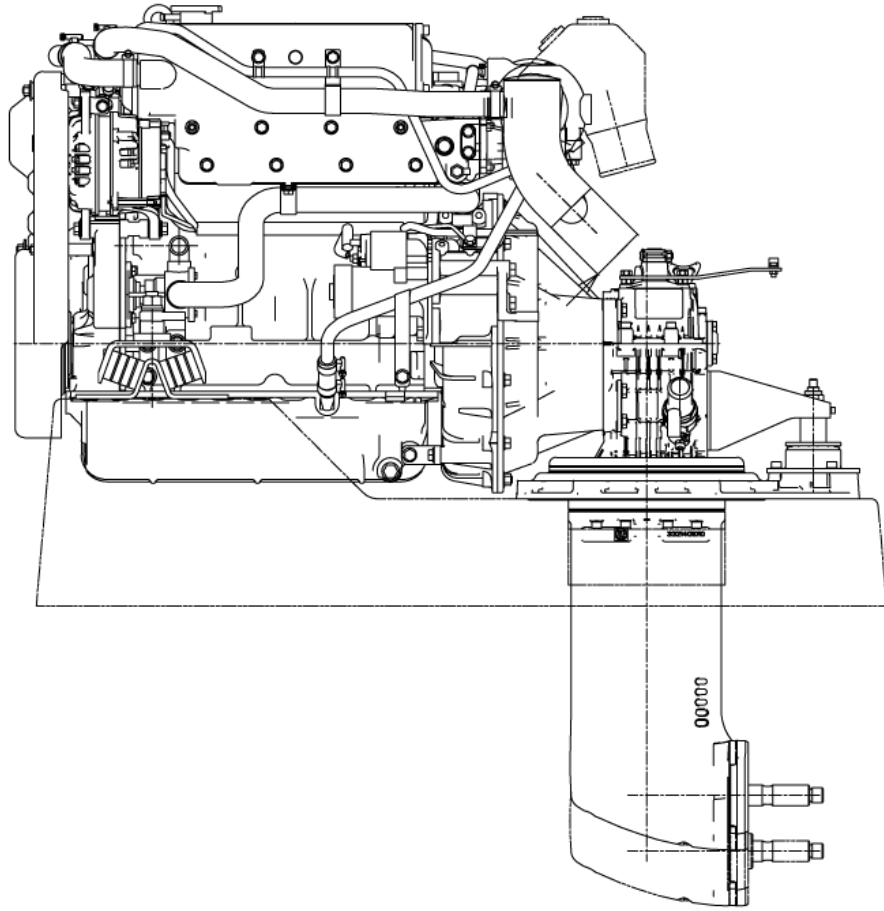
Fn	Speed [kn]	Resistance [N]	P eff	P del	P bat
0,125	2,82	218	0,32	0,72	0,85
0,175	3,94	438	0,89	1,88	2,13
0,225	5,07	767	2,00	4,04	4,49
0,275	6,20	1251	3,99	7,71	8,57
0,325	7,32	1948	7,34	14,05	15,61
0,375	8,45	3381	14,70	28,13	31,25
0,425	9,58	6880	33,90	64,87	72,08

HP VS KW DISCUSSION

- It is all about low end torque
 - The HighPower ServoProp produces almost two times more low end torque than a 80 mhp Yanmar.
- Diesel has higher top speed
 - Where you need power is in top end, and there diesels are superior, however displacement boats are rarely about the top speed



MAIN DIMENSIONS COMPARED TO AN EQUIVALENT POWER DIESEL



CHARGING

Shorepower

Most of the marinas have access to shorepower (6-16A - 1,4-3,8kW)

Hydrogeneration

The HighPower ServoProp produces approx. 3 kW at 8 knots

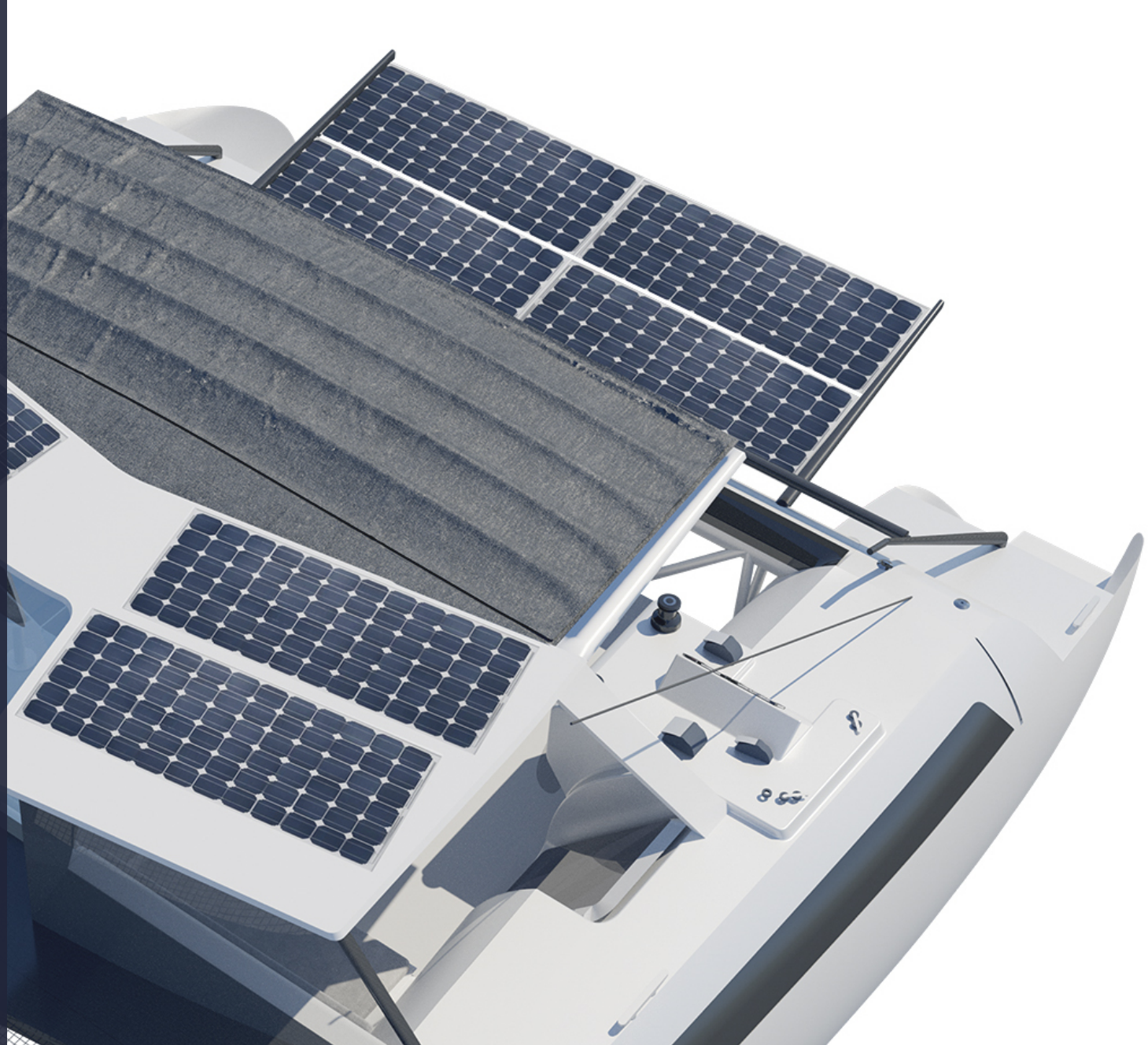
Generator

Enables complete energy self-sufficiency thus adding comfort

Auxiliary sources

Solar, win turbines etc

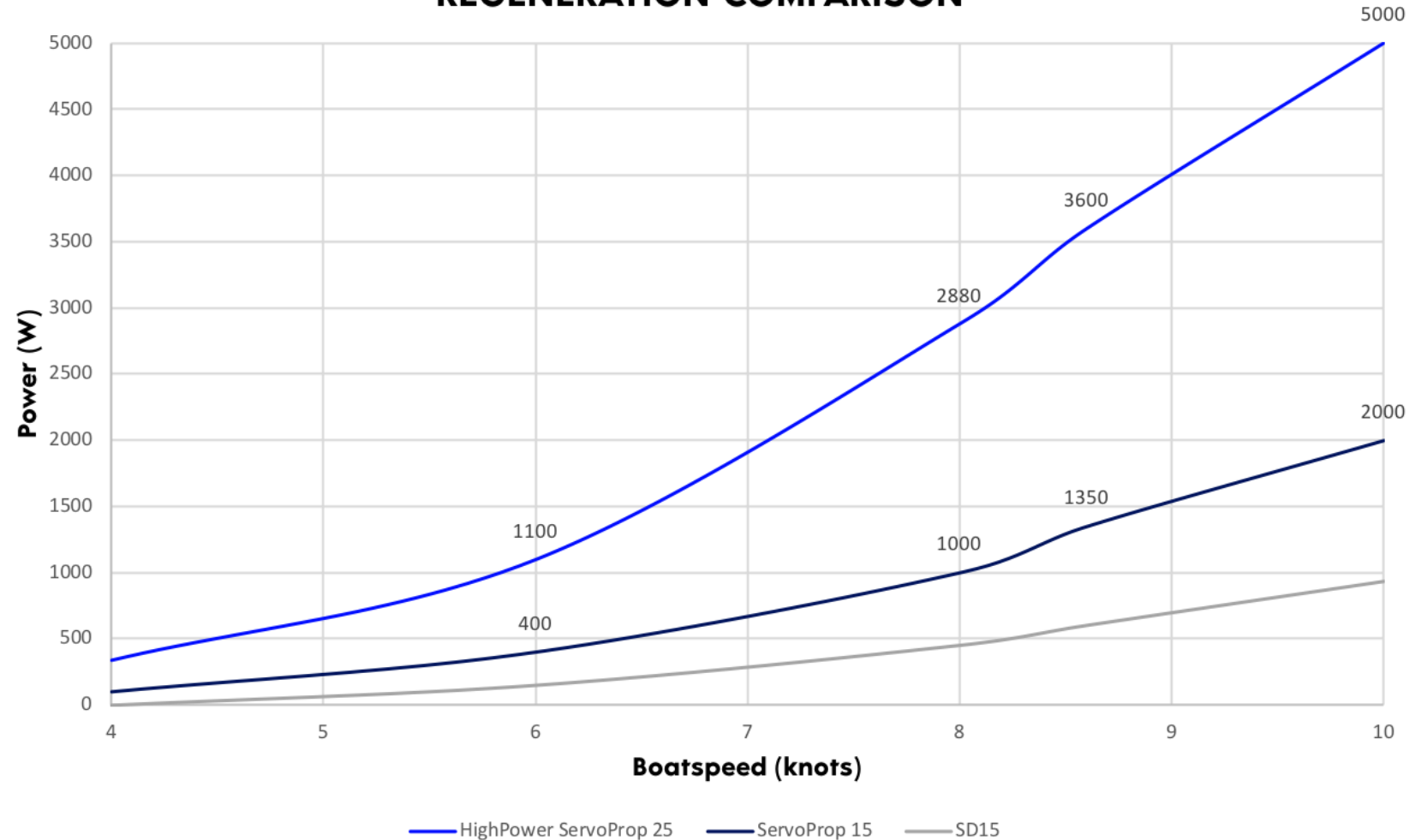
Solar panels are always recommended



ADVANCED HYDROGENERATION

- All electric motors have this capability, however few can control it
- The HighPower ServoProp has market leading hydrogeneration, 100-200% more compared to a ServoProp 15
- The HighPower ServoProp is capable of generating:
 - 1 kW at 6 knots
 - 3 kW at 8 knots
 - 5 kW at 10 knots

REGENERATION COMPARISON



HYDROGENERATION & DRAG

- **Adjustable**

- Propeller blades open partially when hydrogeneration is initiated.
- Choose the suitable combination of power and drag.
 - Control lever in neutral -> low power, low drag.
 - Control lever fully engaged in REV -> max power, more drag.
- Automatic power adjustment to speed fluctuations

- **Safe**

- Soft and safe start at all speeds
- Automatic protection of overcharge
 - Reduces hydrogeneration power when batteries are topping up
 - Turns hydrogeneration off when batteries are fully charged
 - Max hydrogeneration power limiter kicks in at high speed

- **What about drag?**

- Drag is very dependent on the hull and the speed
- At hull speed the drag accounts for approx. 0,5 knots
- If below hull speed the drag can account up to 20% in speed reduction, so i.e. SOW 6kts w/o hydrogeneration 4,8 kts with hydrogeneration

Example:

You are sailing in steady conditions at 8.5 knots with a 50 foot medium displacement monohull sailing boat:

Turn the hydrogeneration on (control lever neutral) -> 8.4 knots, 0.5 kW regen

Adjust to max hydrogeneration (control lever full REV) -> 7.5 knots 2.3 kW,

Adjust to medium hydrogeneration (control lever mid REV) 8 knots 1.5 kW



INSTALLATION, MAINTENANCE & SUPPORT

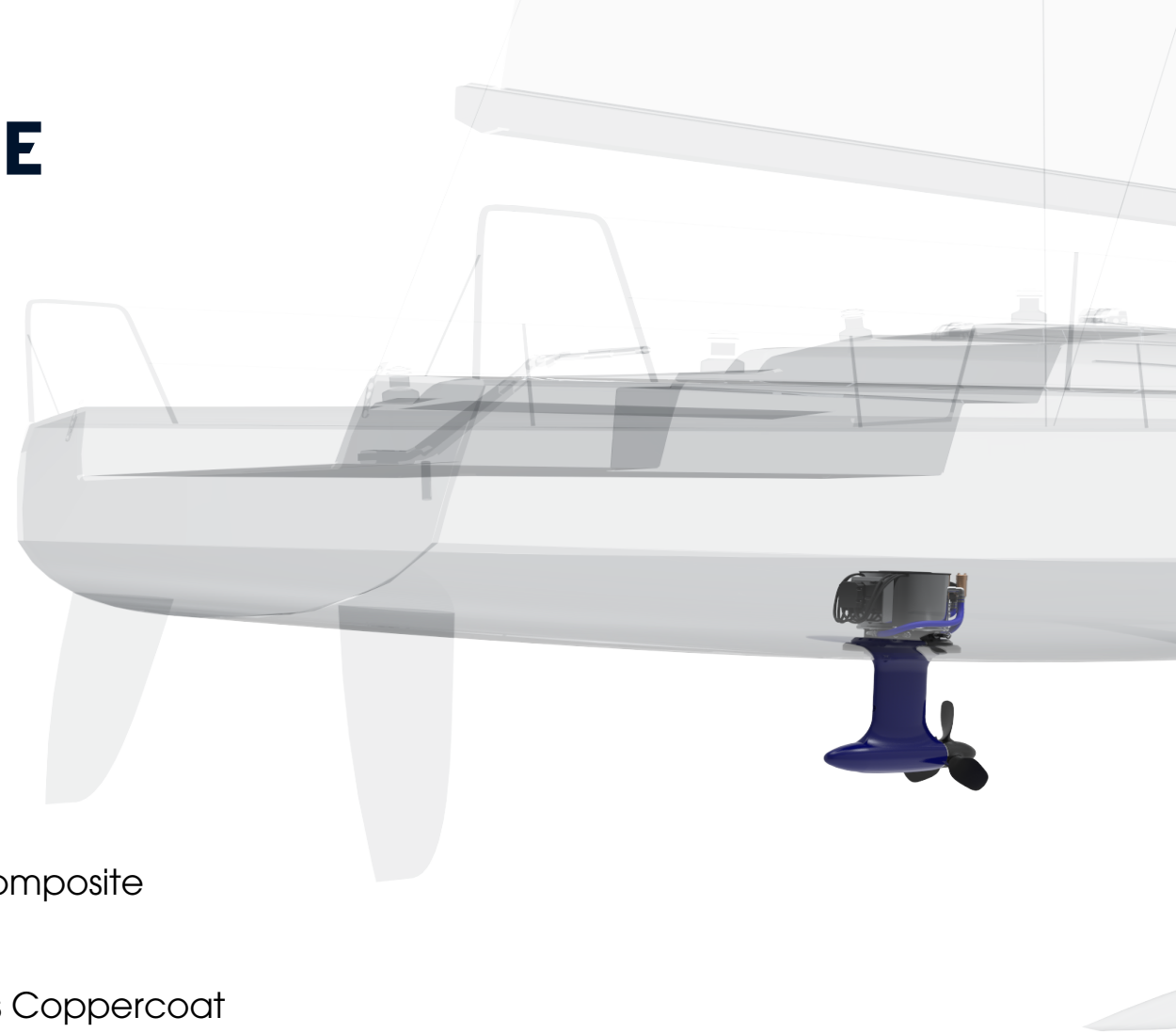
EASY INSTALLATION



- Due to the highly integrated design the installation of HPSP is easy and straight forward
 - Propulsion unit in three (3) main parts
 - **Electric motor** (with integrated motor controller, propeller adjustment mechanism and cooling system)
 - **Flexible mounting** (with seacock).
 - It is preassembled and supplied as one part. It consists of:
 1. Main frame (bolted to the motor bed)
 2. Large O-ring
 3. Upper frame, two part
 4. Connecting flange with integrated seacocks
 - The large O-ring is squeezed between the mainframe, upper frame and connecting flange
 - The flexible mounting is a sealing that also dampens vibrations
 - **Saildrive unit with propeller** (and cooling water inlet and outlet)

SAFETY & EASY MAINTENANCE

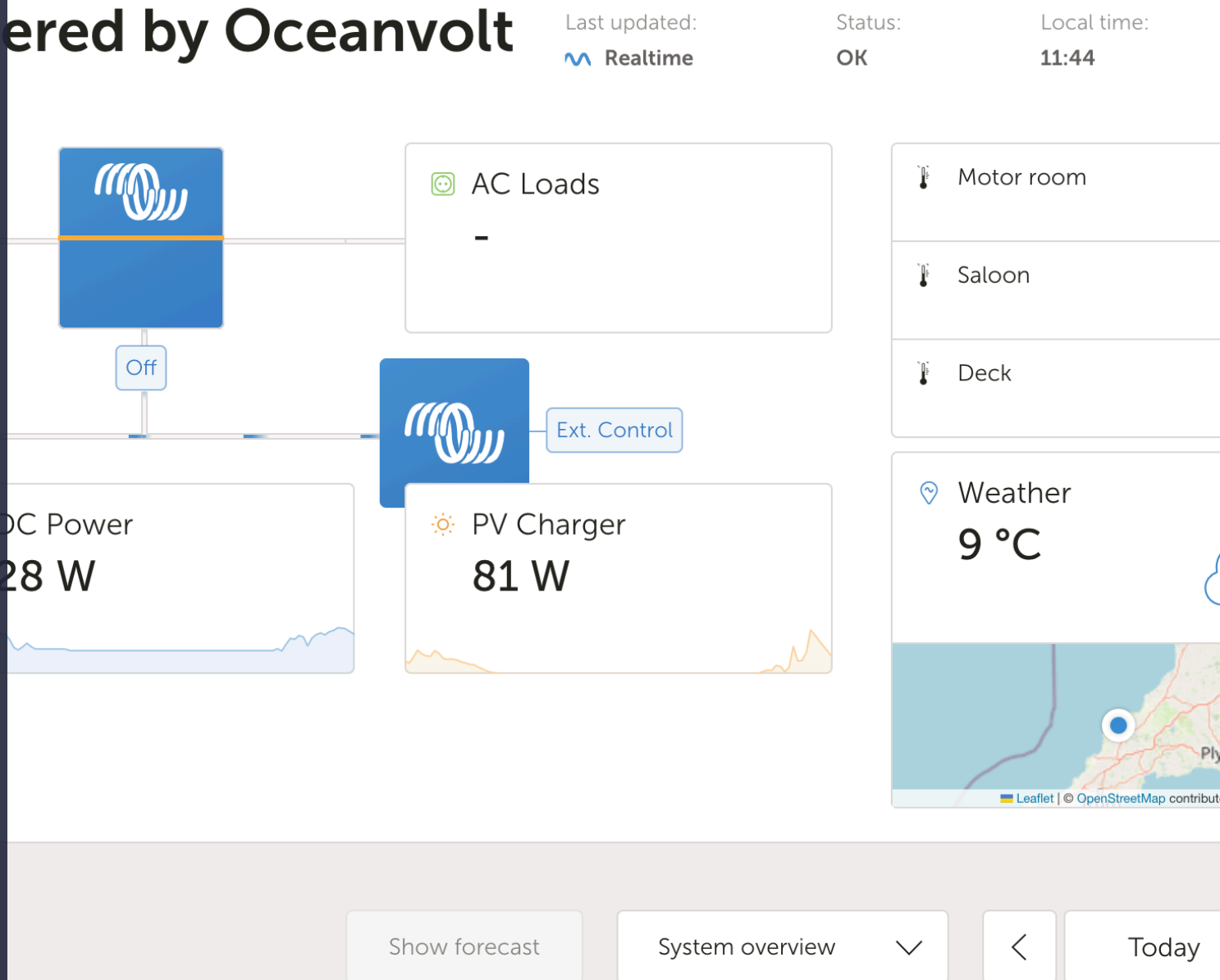
- The system is powered by a safe, low voltage (48 Vdc) battery pack so no high voltage is needed
- The drive can be installed with the propeller facing backwards or forwards, with no penalty to interior space
 - Forward facing propeller is recommended for most efficient hydrogeneration and propulsion
- The saildrive and motor can be easily serviced and are very low maintenance
- The motor, blade adjustment mechanism and oil can be checked and changed and the cooling circuit rinsed from inside the boat without having to lift the entire boat out of the water
- The saildrive, flexible mounting and propeller are made out of composite
 - No need for separate anodes
- Saildrive can be painted with effective antifouling paints such as Coppercoat
 - Made possible by the composite structure
- Integrated rope cutter in the saildrive helps with fishing lines and other debris
- In case of collision the saildrive does not cause a leak thanks to the fail safe/ break off -feature



SYSTEM MONITORING

- Victron VRM & Cerbo GX
 - The main monitoring and support interface both on-board and remote access
- Enables control for most of the system from one point
- Provides statistics for the user and control
- For the best experience, requires an internet connection

AC Input



TECHNICAL SPECIFICATIONS

Motor	HPSP 25
Peak power (15 min)	30 kW
Nominal power	25 kW
Propeller diameter	23 inches
Equivalent HP	75 HP
Weight (incl. motor, saildrive and propeller)	190 kg
Unit dimensions (incl. motor and saildrive)	H: 1101 mm W: 400 mm D: 853 mm
Boat length	up to 21 m (70 ft)
Boat weight	up to 25 000 kg (27.5 US Tons)
Cooling	Liquid