

POWER +

In order to greatly extend the endurance of its M5 and M25 AUV, EcoSub has developed a power bus module

EcoSub's new Power+ is a 27cm-long pressure housing that incorporates an additional set of batteries that effectively doubles the amount of power on the board the M5 and M25 AUVs. It also increases the space for dry electronic payloads.

Weighing only an additional 5kg, the ecoSUBm-Power+ still gives a very portable 17kg total weight (excluding payload).

"The Power+ module has a depth rating of 2,500m," said Ian Vincent, Business Development & Sales Manager, Planet Ocean.

"This allows us to run much higher power payloads than the smaller vehicles. We've also increased the level of buoyancy to accommodate this.

"This extra payload space allows us to accommodate a number of extra items. This includes a Nortek Doppler velocity log (DVL) system and a Marine Sonic Technologies side-scan sonar. We can use systems from 900 to 1800 kHz.

"We're also running the Sonardyne acoustic modem so we can use the Ranger 2 series USBL system. With USBL navigation and a DVL, we can run the advanced navigation using the INS system To greatly increase accuracy.

In addition we've also got a 4K video and stills camera on board. It lies in a housing that can rotate

"The camera has a 1in sensor so it is really good for low-light environments and it uses the USB3 subsea connector that streams directly onto Jetson or a Nano graphics processing unit GPU.

"This encodes the video and allows the user to run machine vision applications. We are still in the early days of this but we have been experimenting with target recognition, detecting people, and plan to use the same system underwater for subsea tracking.

"On the front of the vehicle are a pair of fins. The Power + system uses the standard moving mass for pitch control. We have a moving carriage inside the vehicle which drives forward and aft on a linear actuator.

This system works especially well for the smaller vehicles. It's centrally positioned but the larger Power Plus system sits back slightly further and we don't get quite the same level of authority from that.

"What we've done, therefore, is added a secondary controller with retractable bow planes. So these can be retracted inside the nose cone. When the mission starts, they push



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SAMPLING NOSE CONE

One device exhibited at the MATS show last November involved the novel design of a water sampling system by the University of Southampton in conjunction with an EcoSub.

The system uses a magnetically attached cartridge with 50ml tubes that work like water syringes. Each of the syringes are spring loaded. This means that they are very low power yet reliable in terms of its release. There is also a small motor inside.

This nosecone allows the EcoSub to collect up to six samples. Upon recovery, it is straightforward to switch out the old cartridge, attach a new cartridge and use it again pending sufficient battery life left on the circuit board.

"The ability to analyse samples has advanced considerably in recent years" said Terry Sloane, Managing Director at



Water sampling nosecone

Planet Ocean. It is now possible to extract critical marine information from such a small 50ml samples. Around 20–30 years ago, this wouldn't have been enough water to do any kind of analytical chemistry sampling system.

This 3D printed nosecone was developed as part of the Engineering course.