

# Passive Acoustic Monitoring

METOCEAN



PASSIVE ACOUSTIC MONITORING



SURVEILLANCE



MARINE SURVEY



WATER QUALITY



COMMUNICATIONS GATEWAY



MARINE LIFE MONITORING



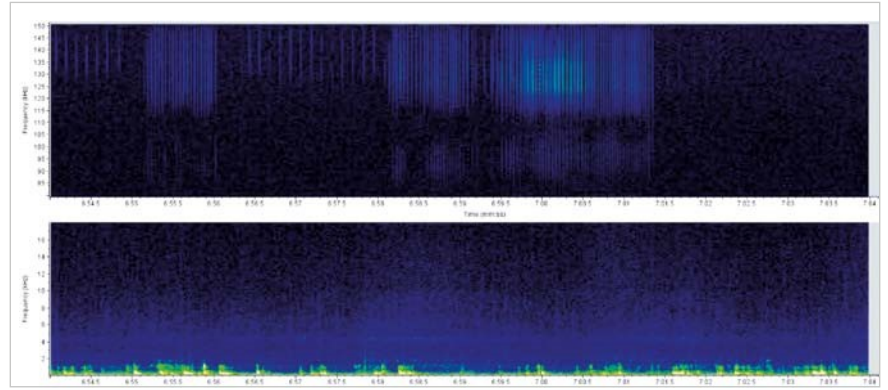
**The AutoNaut is a near silent vessel and therefore ideal for Passive Acoustic Monitoring (PAM).**

Equipped with a Seiche hydrophone array system, the PAM-AutoNaut provides a revolutionary new technique for marine acoustic surveys. It resolves the issues of traditional monitoring methods by providing both mobility and high signal-to-noise ratio and can unobtrusively monitor marine mammals.

- Marine mammal monitoring
- Ambient sound measurement
- Sound source characterization (SSC)



Seiche Digital Thin Line Array



Harbour porpoise detected by PAM-AutoNaut (viewed in PAMGuard software)

# AutoNaut

The AutoNaut is an unmanned surface vessel (USV) propelled forward by the motion of the waves. Patented *Wave Foil Technology* enables long-term mission duration. Powered entirely by renewable energy and with no requirement for offshore personnel the AutoNaut significantly reduces costs and safety risks at sea. Solar energy powers an extensive range of sensors and equipment for 24/7 operation.

- Unmanned operation: no offshore personnel at risk
- Powered by renewable energy: no fuel costs, no emissions
- Mission duration of several months
- Cruising speed of up to 4 knots
- Station keeping within 25 metres
- Storm-proven robustness
- Simple deployment/recovery from vessel or slipway
- Flexible payload and sensor capacity
- Data transfer

## Passive Acoustic Monitoring SENSORS

### Seiche analogue array

The Seiche analogue array incorporates two hydrophone sensors and a depth gauge. It is 30m in length and has been designed for minimal flow noise and simple deployment.

### Seiche digital thin line array

This high-sensitivity acoustic array is fully configurable in real-time. Eight digital hydrophone sensors are incorporated within the 25metre array.

### Additional sensors

Additional sensors can also be incorporated for supplementary meteorological and oceanographic data as well as visual imaging.

### Do you have other sensors to integrate?



<ossi> - AutoNaut's Open Source Sensor Interface provides:

- Easy, cost effective integration of sensors using various data protocols
- Customizable onboard logging and processing options
- Adaptable communications modules including: GSM, WiFi (2.4GHz & 5GHz), Iridium and Inmarsat Sat connectivity, Bluetooth)
- Open source - giving full control to the client