



MITIGATION TECHNOLOGIES



SEICHE TECHNOLOGY

Seiche is the leading worldwide supplier of Passive Acoustic Monitoring (PAM) equipment. We provide a range of solutions from state of the art low-noise digital arrays to simple over-the-side hydrophones, and supply to all industry sectors, including oil and gas, renewables, defence and civil engineering.



TOWED PAM SYSTEM

Our most extensively used PAM system is robust, reliable and available at short notice. The system is available in a number of configurations and is supported by PAMGuard software.

VERTICAL PAM

The vertically deployed system provides a simple and flexible approach suited to static operations such as oil rig VSP and civil engineering works. It is designed to be lightweight and easy to transport, including by helicopter.

FIXED BUOY

A fixed buoy enables mitigation of an offset source and can be positioned in single or multiple configurations. Our Wireless PAM transmission system is fitted for true real-time monitoring. It operates in harsh environments and can be manually handled.

UNMANNED SURFACE VEHICLES (USVs)

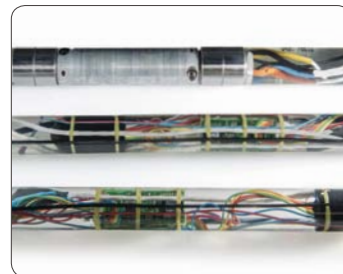
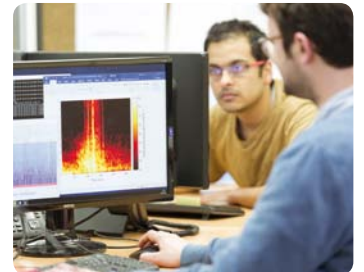
USVs offer complete manoeuvrability to cover a mitigation zone at offset or scope ahead for sensitive species (e.g. baleen whales). Our Wireless PAM transmission system is fitted for true real-time mitigation monitoring.

PAM-CAT

PAM-CAT is designed for operations in challenging environments such as shallow transition zones and complex lagoon waterways. The rafts can be moored on a long-term basis or towed behind a vessel and is fitted with wireless PAM transmission system.

SOURCE-TOW PAM SYSTEM

Hydrophone sensors are deployed directly behind the seismic source thereby removing deployment complications. Of significant benefit is their placement at the centre of the mitigation zone.



REMOTELY MONITORED PAM

Seiche has pioneered the use of satellite technology to transmit PAM signals from a vessel anywhere in the world to a shore-base. Highly trained operators listen to the live audio feed from Seiche HQ. 24/7 flexibility allows mitigation support to on-board operators.

DIGITAL HYDROPHONE

This new generation of digital hydrophones improves signal to noise ratio and enables advanced array control through real-time configuration of gain and filters.

MULTI VESSEL LINK (MVL)

An MVL system enables a PAM HUB station on one vessel to monitor PAM systems installed across the fleet within several kilometres' range. The ability to simultaneously monitor multiple PAM systems gives flexibility to personnel requirements.

CAMERA MONITORING SYSTEM

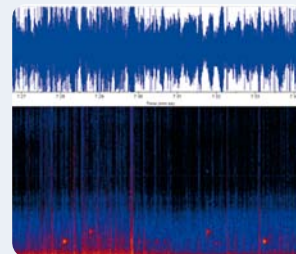
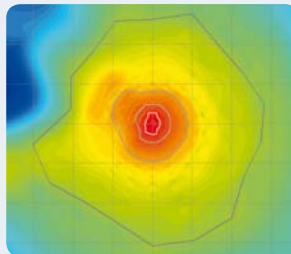
The dual system (Thermal Imaging and High Definition) enables real-time monitoring for marine mammals, small vessels, debris, ice and marine obstacles, both day and night with 360° coverage.

RADES

Real-time Automated Distance Estimation at Sea (RADES) is Seiche proprietary software. It provides accurate ranging information and overlays a mitigation zone live on screen. RADES is also capable of automated detection of marine mammals. This enables robust mitigation decision making that is both objective and recordable.

ACOUSTIC DETERRENT DEVICE

In partnership with Lofitech, this ADD is recognised as the most effective way to warn away seals, porpoises and dolphins from industrial marine operations.



MODELLING

Seiche combines an in-depth knowledge of computational algorithms with practical knowledge of the marine environment. Our collaborative team provides a comprehensive range of services in underwater acoustic modelling:

- Predictive sound source modelling
- Sound Source Verification (SSV)
- Propagation modelling
- Mitigation zone determination

MEASUREMENT

Seiche holds expertise in the equipment, operation and analysis involved in underwater sound measurement. Regulatory requirements have increased and the assessment of ambient and anthropogenic sound levels must now meet exacting standards. Our collaborative team can complete measurement tasks through the entire process to the highest quality.

MITIGATION

Regulatory requirements for effective noise mitigation have increased – particularly for the protection of whales and dolphins. It has become standard practice across several industry sectors for Passive Acoustic Monitoring (PAM) to detect vocalising marine mammals – in real-time – to ensure none are within close vicinity of an active sound source.

FULL ENVIRONMENTAL SERVICE PROVISION

Building on our global reputation for providing market-leading technology, Seiche Environmental provides quality and effective end-to-end solutions for all stages of project lifecycles. Service provision includes:

- MMO, MFO and PSO
- PAM operators and equipment
- FLOs
- Environmental scientists/ reps
- Marine mammal risk and impact assessments
- Noise modelling and monitoring
- Baseline surveys

TRAINING

Seiche provides highly regarded training for individuals and companies in the UK and around the globe. The courses cover all aspects of Marine Mammal Monitoring (visual and acoustic) as well as the practicalities of mitigation in the field and include:

- JNCC Accredited MMO course
- BOEM/BSEE Accredited PSO course
- PAM Operator – Level 1 and Level 2

