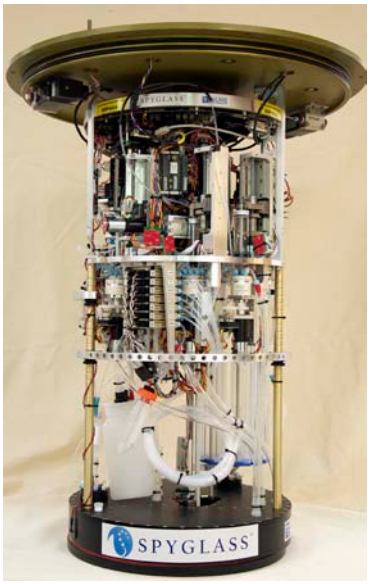
SPYGLASS™

Portable Water Laboratories

Ask. Know. Now.

The Spyglass Environmental Sample Processor (ESP) is a portable water laboratory that provides on-site collection and analysis of water samples in aquatic environments. The ESP is an electromechanical, fluidics system designed to collect discrete water samples, concentrate microorganisms or particles, and automate application of molecular probes in order to identify microorganisms and their DNA or protein products. Data generated are then available for remote transmission and analysis in near real-time.



Internal View of the Core ESP

ESP Features and Benefits

- Reduction in critical time-to-results; automated sample processing; increased data reliability.
- Performs up to 44 analyses during a deployment period of up to 3 months.
- Core ESP provides the primary interface between the environment and a set of DNA and antibody-based analytical technologies that are applied onboard the instrument in real-time.
- Expandable design can control secondary nutrient and chemical modules for parallel processing of collected samples.
- Samples can be preserved for a variety of analyses after the system is returned to a laboratory.
- Deployments in fresh water and marine environments and at various depths depending on instrument housing and mooring system.

User Interface: The ESP Mission Planner allows users to define the frequency of testing, specify protocols, and determine the sampling parameters based on target organisms. The Mission Planner also calculates the required supplies and reagents for the deployment.

Contextual Sensors & qPCR Module: The ESP system software and interfaces currently support the Satlantic ISUS nutrient sampler and the SBE 16plus CTD. Contextual sensor data are collected according to specified scheduling options. The ESP platform allows for full customization of molecular probe technologies and processes, providing a framework for custom probe development and deployment.

The quantitative PCR (qPCR) analytical module is an upgrade option for the core Spyglass ESP System. This technology is provided under a license from the Lawrence Livermore National Laboratories and is capable of performing standard qPCR tests including TaqMan® and SYBR Green chemistries. Assay performance on commercially available bench top qPCR systems such as those provided by Applied Biosystems and Agilent/Stratagene translates well to the Spyglass module.

Specifications*

Dimensions (approx.)

Core: 82 cm h x 56 cm dia

Pressure Housing: 95 cm h x 65 cm dia

Weight (approx.)

Core: 27 kg

With Pressure Housing: 102 kg

Molecular Methodology

Sandwich hybridization (SHA)

Immunosorbent assays (cELISA)

Quantitative PCR (qPCR) – available with upgrade

Power

10-16V DC

Deployment

Environment: Fresh to marine water.

Installation: Pier-based to high-energy ocean.†

Depth: Down to 50 m; deep-sea trials (down to 4000 m) ongoing.†

Duration: Up to 44 analyses during a period of up to 3 months.

Operating temperature: 0° to 29° C (depending on reagents deployed).

* Subject to change without notice.
† Additional equipment necessary for high-energy and deep environments.

Contact

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The qPCR module may be purchased as a standalone system for method validation prior to coupling with the core ESP platform.

Targets: Currently available are molecular probes for the detection of water-borne bacteria, algal species associated with harmful algal blooms, and larva of several marine organisms. Probes are available in standardized or custom arrays.

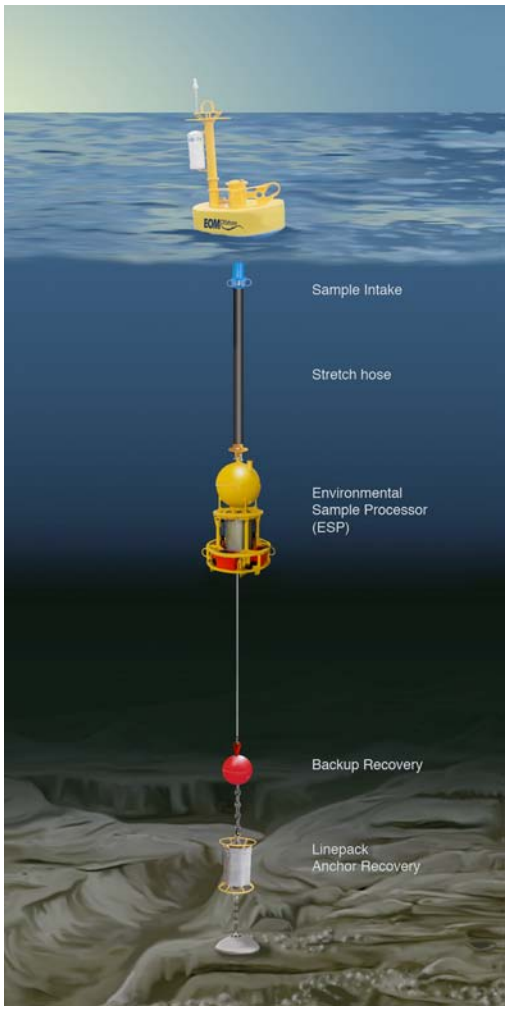
Deployment: The ESP has been deployed on piers as well as in high-energy ocean environments. The optional Aluminum ESP Pressure Housing is rated to 50 meters for subsurface ocean deployments. Dynamic damping of wave energy and surface currents is required for reliable operation in high-energy environments. Deep-sea trials (rated to 4000 meters with a custom system) are currently ongoing at MBARI.

Support and Services: One-on-one, hands-on training is available. Support, troubleshooting, user forums, and reference information are available on the Spyglass website. (Go to www.spyglassbio.com and click the Support tab.) Optional ESP products and services include configuration, deployment, and refurbishment.

Reagents, accessories, and standardized arrays are available by calling +1 (831) 883-9838 or via the Spyglass Store (www.spyglassbio.com/catalog). For custom arrays, contact a Spyglass representative.

Spyglass Customers

- Monterey Bay Aquarium Research Institute (MBARI)
- Environmental Protection Agency (EPA)
- Woods Hole Oceanographic Institution (WHOI)
- DHI Group - Singapore
- Harvard University
- National Oceanic and Atmospheric Administration (NOAA)
- Oregon Health & Science University (OHSU)
- Stanford University
- University of British Columbia (UBC)
- University of California at Santa Cruz (UCSC)
- University of Georgia (UG)
- Arizona State University (ASU)



Subsurface deployment of ESP with sampling and mooring options

Spyglass is the worldwide exclusive licensee of patented technology from the Monterey Bay Aquarium Research Institute (MBARI).

Spyglass Commitment to Protecting Global Water Resources

Spyglass provides critical information to commercial, municipal, and research customers with interests in the biology and chemistry of water as it relates to public health, agriculture, aquaculture, and environmental research. With real-time information in hand, water resource managers can:

- Assess the exposure risk of people to harmful bacteria and toxins. Early warning allows for a quick response, which safeguards human health.
- Implement better treatment procedures and policies based on novel water research.

Through global water information networks, Spyglass aims to raise awareness of the need to monitor our water resources proactively and comprehensively.

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