FICHE TECHNIQUE

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APS

Applications

- Fisheries research
- Plankton studies
- Fixed depth and undulating towed vehicles
- Pumped systems
- Moorings

(top)

Features

- Onboard batteries and microcontroller
- Hydrodynamics closely matched to the Hardy sampler
- Integral flow meter
- Integral 6 channel data logger
- Uses standard 270 μm mesh silk or 80 μm nylon gauze
- Pre-programmed or commanded sampling

(top)

Product Description

The Autonomous Plankton Sampler is the result of a collaborative venture between the Centre for Coastal Marine Science and Chelsea Technologies Group to design and develop a new versatile, low-cost plankton sampler mechanism. The Autonomous Plankton Sampler is intended for use in Chelsea's Nν -Shuttle and AQUA^{shuttle} towed vehicles as well as ship-borne & mooring pumped deployments. It also provides a modern replacement for traditional sampling mechanisms such as that used in the Continuous Plankton Recorder (CPR) programme of the Sir Alister Hardy Foundation for Ocean Science (SAHFOS).

The Autonomous Plankton Sampler incorporates an internal programmable data logger controller and battery pack coupled with state of the art electric motor technology to drive the gauze advance mechanism. Gauze advance, battery low and memory full flags are logged after every gauze advance. The Autonomous Plankton Sampler provides data logging for six external environmental sensors along with the capability to trigger the gauze advance protocol from an external source such as MINI^{pack} or other CTDs. Provision has been made for the inclusion of a flow meter if required. The system is intended to meet the requirements of sampling programmes for the 21st Century, whilst maintaining data compatibility with the 60-year time series of the CPR and other long-term monitoring programmes. The sampler sensor suite is optimised to meet the requirements of programmes such as GOOS, EuroGOOS, the Large Marine Ecosystems (LME) programme and the US National Marine Fisheries Service.

The Autonomous Plankton Sampler is constructed in stainless steel with two spools of either silk or nylon gauze, integral microcontroller, motor, batteries and flow meter. On towing or pumping, the water passes through the intake aperture. The zooplankton are captured upon a filtration gauze which is then

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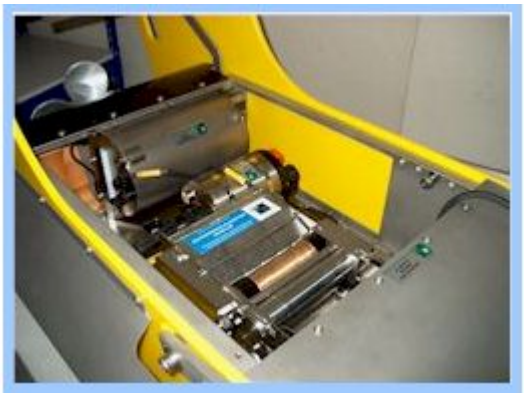

Key Design Features

- The hydrodynamics of the water intake into the sampling mechanism closely matches that of the existing Hardy mechanism. This is intended to maintain continuity between the samples collected during the last 60 years by the CPR programme and those that will be collected using the new system.
- The electric motor permits the use of an electronic controller, and the ability to programme a complete tow in terms of sampling duration before each gauze advance. External advance on demand is also available.
- The onboard microprocessor also enables such features as early gauze advance to be incorporated, for example by high chlorophyll levels. The option of sensing the pressure differential across the gauze permits advance when the onset of clogging is indicated.
- Measurement of flow through the device can be incorporated in the mechanism exhaust. The controller/logger system permits logging of gauze advance, flow rate, together with output from external sensors, all date and time stamped.
- Standard silk gauze is used (270µ m mesh). Nylon gauze may also be used, permitting sample wash-off and allowing the use of mesh sizes down to 80µ m for quantitative sampling of juvenile stages and smaller copepods.
- The mechanism can be used in undulating bodies such as the Chelsea Technologies Group Nν-Shuttle, to enable discrimination of zooplankton variability with depth.
- The mechanism has been simplified to obviate the need for skilled operators to set up prior to deployment.

(top)

covered by a second gauze and wound on to a collection spool immersed in preservative. Post-deployment analysis is undertaken either on gauze or wash off.

(top)

Instrument Software

The Graphical User Interface (GUI) is a 32-bit Windows application used to programme the controller. Error detection is used on all data transfers. The plankton sampler screen allows the operator to set the frame advance rate based on either time, chlorophyll-a or flow.

- Click to visit the Finnish Institute of Marine Research website and view a presentation written by Juha Flinkman, FIMR, on their experience of the continuous plankton recorder in the Baltic
- Click to download paper entitled 'A New Automated Plankton Sampler'

(top)

Specification

GENERAL

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Size:	140mm x 235mm x 291mm
Weight:	12.75Kg
Depth Rating:	200 metres
Operational duration:	2 to 4 weeks
Batteries:	6 x 1.2V primary cells
Time between gauze advances:	15 secs to 1 year
Switch on:	Internally programmable or external trigger
Preservation:	Formalin tank
Gauze size:	80 to 400 µm range
Filtration area:	50 x 100 mm
Inlet port:	25 x 100 mm
Maximum tow speed:	25 knots

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