

Free-fall OBS



Autonomous ocean-bottom seismometry systems

Güralp Systems' "free-fall OBS" platforms provide the capability to rapidly deploy arrays of ocean-bottom seismometers for short and medium-term projects. They can be used at depths of up to 6,000m and are easily recovered using sonar signals and AIS radio.

The free-fall OBS platform is suitable for a wide variety of applications, including the study of plate tectonics, tsunami early warning systems, petrochemical exploration, offshore wind turbine monitoring, security systems and many others.

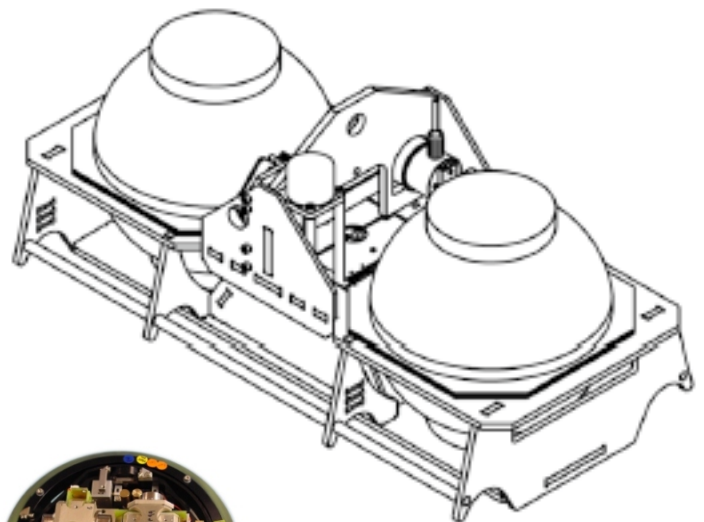
Key Features:

The free-fall OBS platform consists of a rigid HDPE cradle which contains two glass spheres and a central compartment for a sensor. The spheres contain the batteries, a digitiser, storage media and other electronics.

The whole assembly has positive buoyancy which is counteracted by two, sacrificial concrete weights. These attach to the sides of the cradle for deployment but are jetisoned on receipt of an acoustic signal when the sensor is to be recovered. The same acoustic transponder system is used to obtain an accurate location for the sensor when deployed.

Once the platform floats to the surface, a GPS receiver and AIS radio broadcast its location in an internationally recognised maritime format. A flag and strobe light further aid location.

The free-fall OBS platform can be supplied with a range of sensors, including the CMG-6TC OBS, a true triaxial, broadband, force-feedback seismometer mounted on dual, gravity-driven, microprocessor-controlled, electrically-braked gimbals. Other transducers, such as pressure gauges and hydrophones can be incorporated.



Specifications



Sensor options:

CMG-3T-OBS
CMG-40T-OBS
CMG-6TC-OBS

Sensor casing options:

Titanium (6,000 metres)
Glass (6,000 metres)
Aluminium (2,000 metres)

Digitiser options:

CMG-DM24
CMG-CD24

Battery options:

Lithium-ion-polymer (rechargeable)
Lithium-thionyl chloride (non-rechargeable)

Typical specifications with 6TC-OBS sensor

Velocity output bandwidth	<i>120 seconds / 60 seconds to 200Hz (other options available)</i>
Lowest spurious resonance	<i>450Hz</i>
Linearity	<i>> 100 dB</i>
Cross-axis rejection	<i>> 65 dB</i>
Self-noise	<i>-172 dB (relative to $1m^2s^{-4}Hz^{-1}$)</i>
Gimbal operating range	<i>$\pm 120^\circ$, any axis</i>
Gimbal control system	<i>Microprocessor with external serial interface</i>
Gimbal settling time	<i><20 seconds</i>
Operating temperature range	<i>-20 to +75 °C</i>
Temperature sensitivity	<i><0.6V per 10 °C</i>
Sensor dimensions	<i>160mm sphere (with 20mm flanges in Al and Ti)</i>
Cradle dimensions	<i>1,480 (length) x 604 (breadth) x 657mm (height)</i>
Mass (without ballast)	<i>135kg</i>
Total Mass (with ballast)	<i>150kg</i>

