



**Seismic**

P R O D U C T S



**PartnerPlast**

Marine Subsea Group



## Contents

About PartnerPlast.....	5
Tail Buoy 1050.....	7
Tail Buoy Series.....	9
Dilt Floats.....	10
Navigation Floats.....	12
Handling products for seismic cables.....	13
Gun Systems.....	14
Float Steering and Positioning System (FSPS).....	15
Robust RTK Tracking .....	16
Dynav – positioning system.....	17
Device Tracking and Control – DTAC.....	18
Electronic Systems.....	20
Green Line.....	21
Consulting Services.....	22
Field Services and Navigation.....	23
Service & Support.....	24
Engineering.....	24
Other products/accessories.....	25
PartnerPlast Offices.....	27

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## About PartnerPlast

PartnerPlast is a leading specialist in plastic materials, rotational moulding and design.

We manufacture a wide range of products within our product segments: Seismic, Offshore & Subsea, Electronics and Industry.

The history of PartnerPlast stretches all the way back to 1946. The first buoyancy products were supplied to the offshore industry in 1979. The development of subsea products started in the late 1990's. These products were first marketed through our daughter company Marine Subsea Group. But as of 2009 the company and its products became an integrated part of PartnerPlast as an independent product segment called Offshore & Subsea. In 2014 PartnerPlast acquired Exploration Support Services Inc. in Houston and subsequently changed the company name to PartnerPlast Inc. PartnerPlast Inc. primarily offers operational support services, but also our full range of Seismic and Offshore & Subsea products. During 2014 Powex AS also became a fully integrated part of PartnerPlast. This signifies our continuous effort to provide an extended and broad product range, where our design and standards will meet even the toughest demands.

### **Our products within the Seismic range include:**

- Tail Buoys
- Dilt Floats
- Gun Systems
- Electronics
- Accessories
- Dynav – Navigation system
- DTAC – Tracing system
- Float Steering and Positioning System (FSPS)
- Lights
- Magnetics and Gravity services
- Marine Mammal Observations support
- Service & Support

Since the beginning our experience and know-how has given our customers the needed assurance.

If our standard products do not match your demands, we are more than happy to design and manufacture products that will fit your unique needs and requirements.

We have our own in-house engineering department. The town of Åndalsnes is a center for the plastic industry in Norway and the key suppliers are located at our doorstep. This unique situation has enabled PartnerPlast to have an exceptional track record of supplying every project on time, and we will do everything to keep it that way!

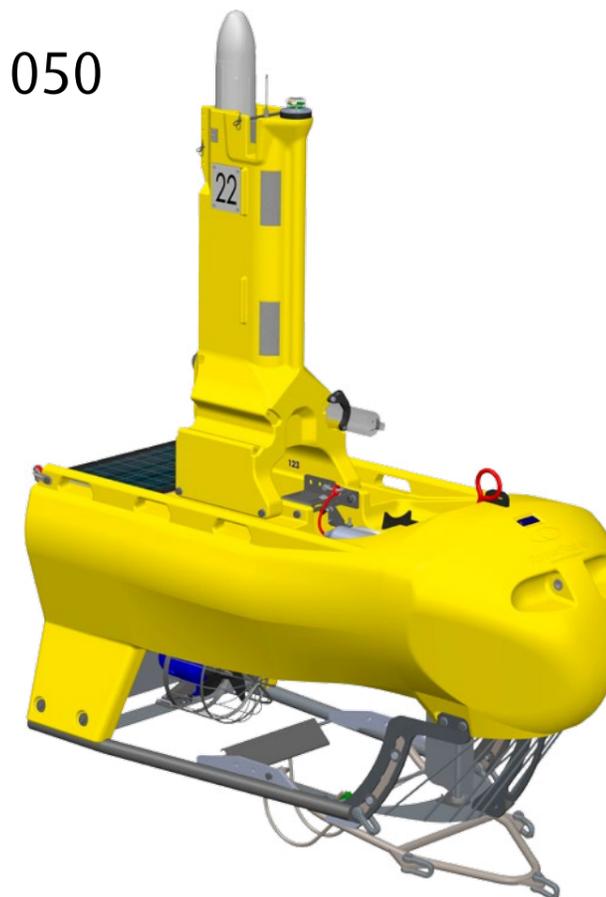


Tom Samuelson, CEO





# Tail Buoy 1050



## PartnerPlast has developed a new generation of controllable Tail Buoys

- The Tail Buoys are designed to simplify handling of the streamer cables.
- Both the rudder and brake flaps can be controlled from the ship.
- The Tail Buoys have radio communication, which provide direction and tilting info.
- Each Tail Buoy is marked with a serial number for QA tracking and identification.
- The Tail Buoys are manufactured in a plastic material called polyethylene. This material represents a superior combination of high stress crack rate, high strength, and high tear resistance.

### Specification

Volume	1050 L
Length	2370 mm
Height	2420 mm /2372 mm
Width	1020 mm
Weight	264 kg
Steel material	AISI 316
Body material	Polyethylene
Body material filling	EPS 25 kg/m <sup>3</sup>

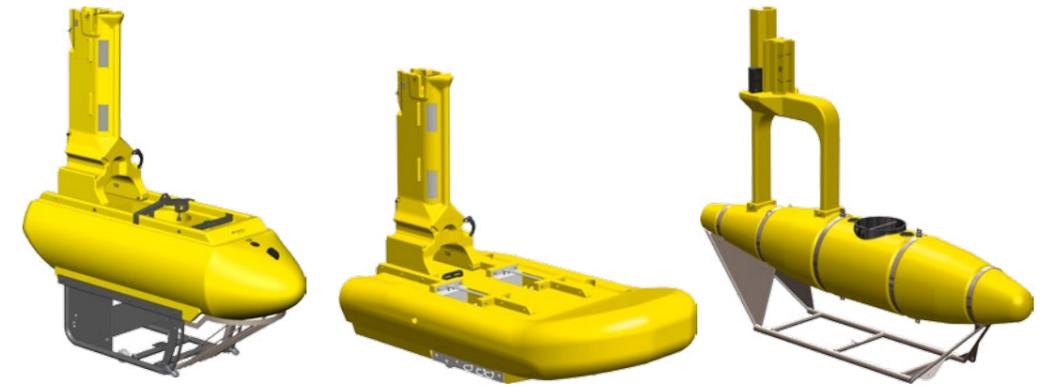
### OPTIONS 1050



Long mast    Short mast    Solar panel    Light    Carmanah light    Generator UW    Generator PP-UW120  
 Elbox    Battery    PC portable    Pinger bracket    Rudder    Flaps    Deep towing unit



## Tail Buoy Series



Spesification	Tail Buoy 800/1300	Tail Buoy 900	Tail Buoy 1000
Volume	800 L / 1300 L	900 L	1000 L
Length	2390 / 3250 mm	2500 mm	3840 mm
Height	2530 / 2564 mm	1527 mm	2900 mm
Width	850 / 850 mm	1350 mm	755 mm
Weight	230 / 300 kg	200 kg	310 kg
Steel material	AISI 316	AISI 316	AISI 316
Body material	Polyethylene	Polyethylene	Polyethylene
Body material fill	EPS	EPS	EPS

PartnerPlast has since the 1990's developed and delivered Tail Buoys to most seismic companies worldwide. We have a wide range of Tail Buoys and electronic systems that fit most applications.

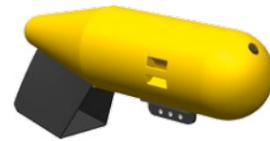
### OPTIONS TAIL BUOY SERIES





# Dilt Floats

PartnerPlast has since the 1990's developed and delivered Dilt Floats to most seismic companies worldwide. We have a wide range of Dilt Floats systems that fit most applications.



Specification	Dilt Float 270 Plastic fin
Volume	270 L
Length	1848 mm
Height	726 mm
Width	495 mm
Weight	40 kg
Steel material	AISI 316
Body material	Polyethylene
Body material fill	EPS

Specification	Dilt Float 500 Plastic fin
Volume	500 L
Length	3100 mm
Height	726 mm
Width	495 mm
Weight	68 kg
Steel material	AISI 316
Body material	Polyethylene
Body material fill	EPS



Specification	Dilt Float 1000 Steel fin
Volume	1000 L
Length	3840 mm
Height	900 mm
Width	755 mm
Weight	247 kg
Steel material	AISI 316
Body material	Polyethylene
Body material fill	EPS

Specification	Dilt Float 1000 Plastic fin
Volume	1000 L
Length	3840 mm
Height	900 mm
Width	755 mm
Weight	204 kg
Steel material	AISI 316
Body material	Polyethylene
Body material fill	EPS



GPS flexible mast  
Universal



GPS mast  
Universal



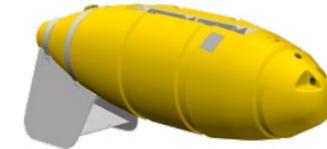
GPS bracket  
Seatrack



GPS bracket  
Universal



Specification	Dilt Float 1500 Plastic fin
Volume	1500 L
Length	3817 mm
Height	1320 mm
Width	902 mm
Weight	265 kg
Steel material	AISI 316
Body material	Polyethylene
Body material fill	EPS



Specification	Dilt Float 2000 Steel fin
Volume	2000 L
Length	3595 mm
Height	1458 mm
Width	1100 mm
Weight	338 kg
Steel material	AISI 316
Body material	Polyethylene
Body material fill	EPS

Specification	Dilt Float 2000 Plastic fin
Volume	2000 L
Length	3595 mm
Height	1458 mm
Width	1100 mm
Weight	294 kg
Steel material	AISI 316
Body material	Polyethylene
Body material fill	EPS



Specification	Dilt Float 2500 Steel fin
Volume	2500 L
Length	3860 mm
Height	1530 mm
Width	1200 mm
Weight	345 kg
Steel material	AISI 316
Body material	Polyethylene
Body material fill	EPS

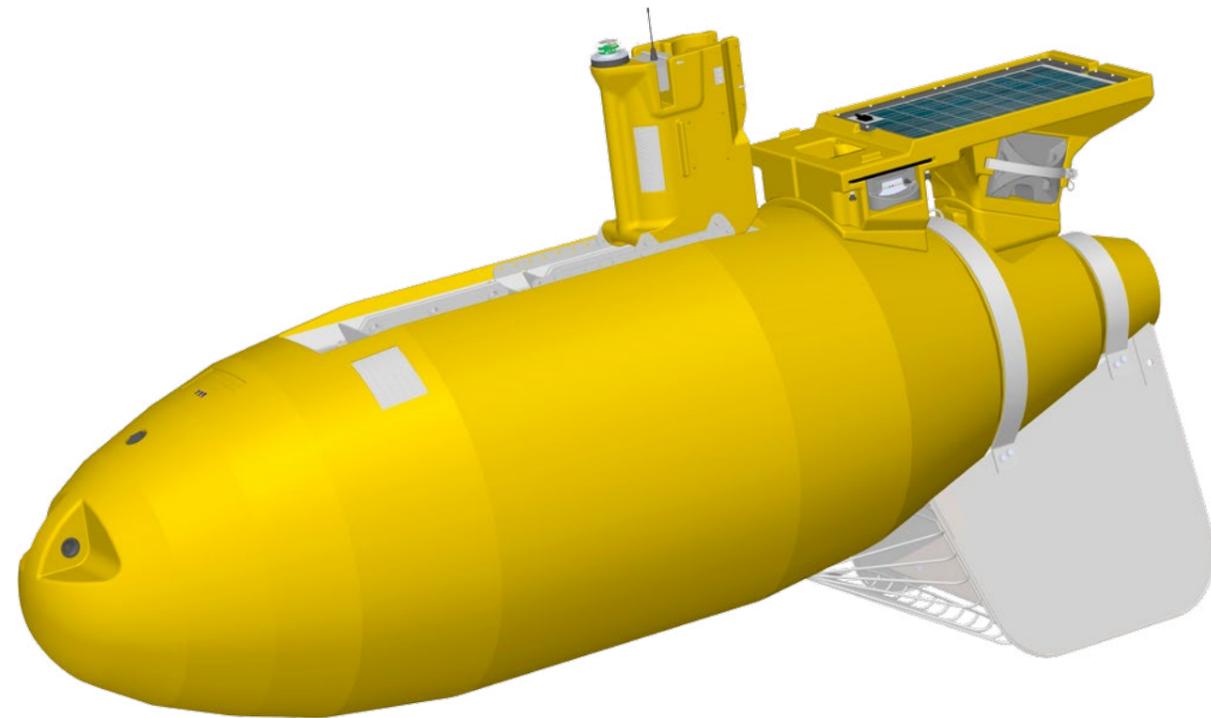
Specification	Dilt Float 2500 Plastic fin
Volume	2500 L
Length	3860 mm
Height	1530 mm
Width	1200 mm
Weight	325 kg
Steel material	AISI 316
Body material	Polyethylene
Body material fill	EPS

# Navigation Floats

Navigation Floats are suitable when you want to monitor the position and movement in addition to the traditional Dilt Float functionality.

Our range of Navigation Floats consists of several sizes, spanning from the largest 2500 to the smallest 1000.

The Navigation Floats are equipped with power generator, solar panel and battery pack.



## OPTIONS NAVIGATION FLOATS



GPS flexible mast  
Universal

GPS mast  
Universal

GPS bracket  
Seatrack

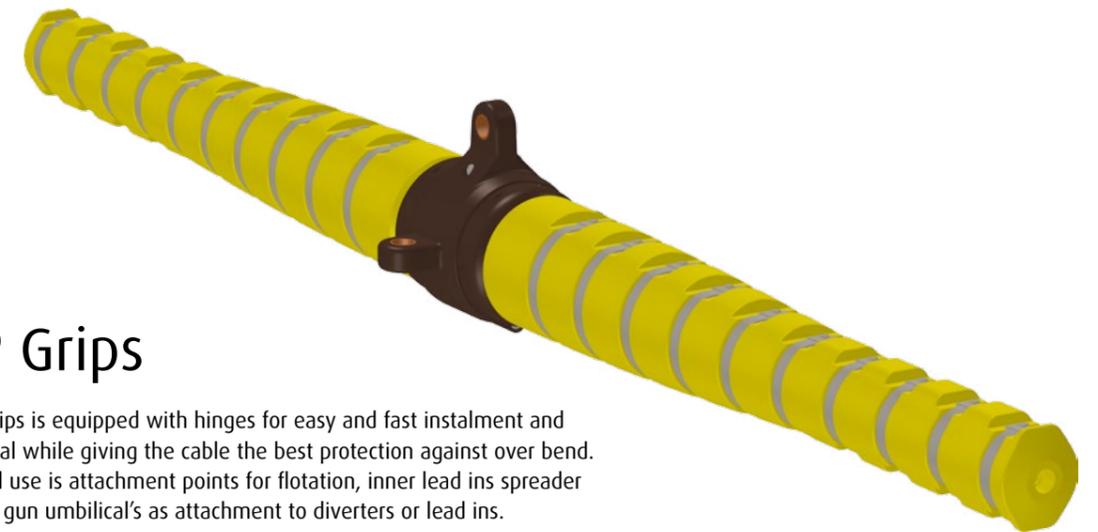
GPS bracket  
Universal

Navigation kit  
Dilt Float

Cover for Solar  
Panel

# Handling products for seismic cables

New Product POLYURETHANE



## PP Grips

The grips is equipped with hinges for easy and fast instalment and removal while giving the cable the best protection against over bend. Typical use is attachment points for flotation, inner lead ins spreader ropes, gun umbilical's as attachment to diverters or lead ins.

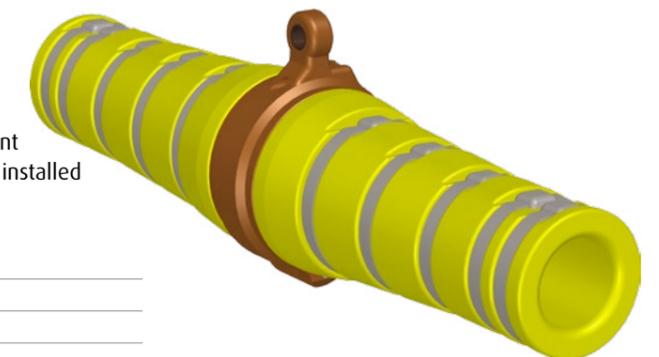
To achieve good friction and compression over the cable, steel bands is used.

### Spesification

Length	2400 mm
Weight in air	52 kg
Weight in water	21 kg
Diameter, max	160 mm
Material	Polyurethane
Material carrier ring and yoke	NiAlBr
Diameter shackle eye	25,5 mm
Fixture	Metal band (SS)
Options	One or three shackle mounts Includes cable diameters 25 mm to 65 mm
Design load	Static

## PP Slider

The grips is designed to slide down a lead in for attachment to flexi float system, lead in flotation or other temporarily installed equipment while protecting the lead in from over bend.



### Spesification

	Lead in slider
Length	1000 mm
Weight in air	29 kg
Weight in water	10 kg
Diameter, max	215 mm
Material	Polyurethane
Material yoke	NiAlBr
Diameter shackle eye	25,5 mm
Fixture	Metal band (SS)
Design load	Static

# Gun Systems

PartnerPlast delivers two different gun systems, one flexible and one system for use in shallow water. These systems are designed and tested with our customers.



Mounted winch

## Gun Catamaran

A special Gun System for use in shallow water operations

### Specification

Volume	2800 L
Length	6800 mm
Height	1990 mm
Width	2280 mm
Weight	800 kg
Steel material	AISI 316
Body material	Polyethylene
Body material fill	EPS

## Flexi Gun

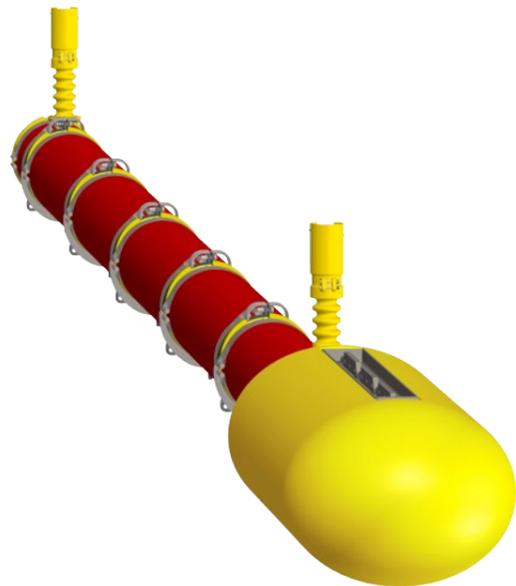
PartnerPlast's Gun System

### Specification

Flexible float diameter	18"
Flexible float buoyancy/m	160 kgf
Working pressure	10 Psi (0,7 bars)
Steel material	AISI 316
Body material	Polyethylene
Body material filling	EPS
Buoyancy	1800 kgf

### Options

- Safety rope between each connector
- GPS support(s) can be placed over each collar
- Separation between each cluster
- Number of clusters
- Steel Flexi Gun nose guard for Head Float



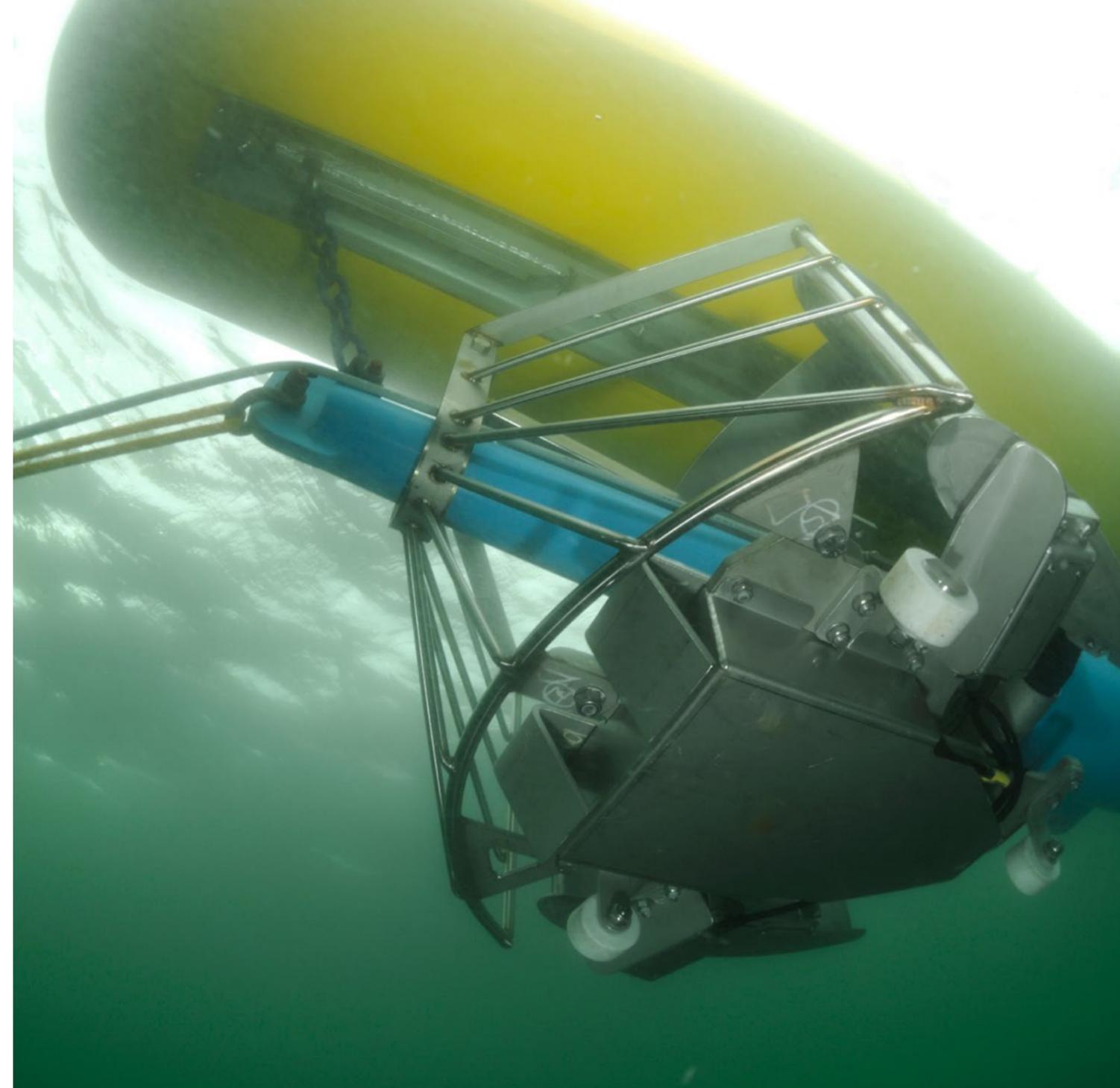
End Gun Connector



Gun Connector



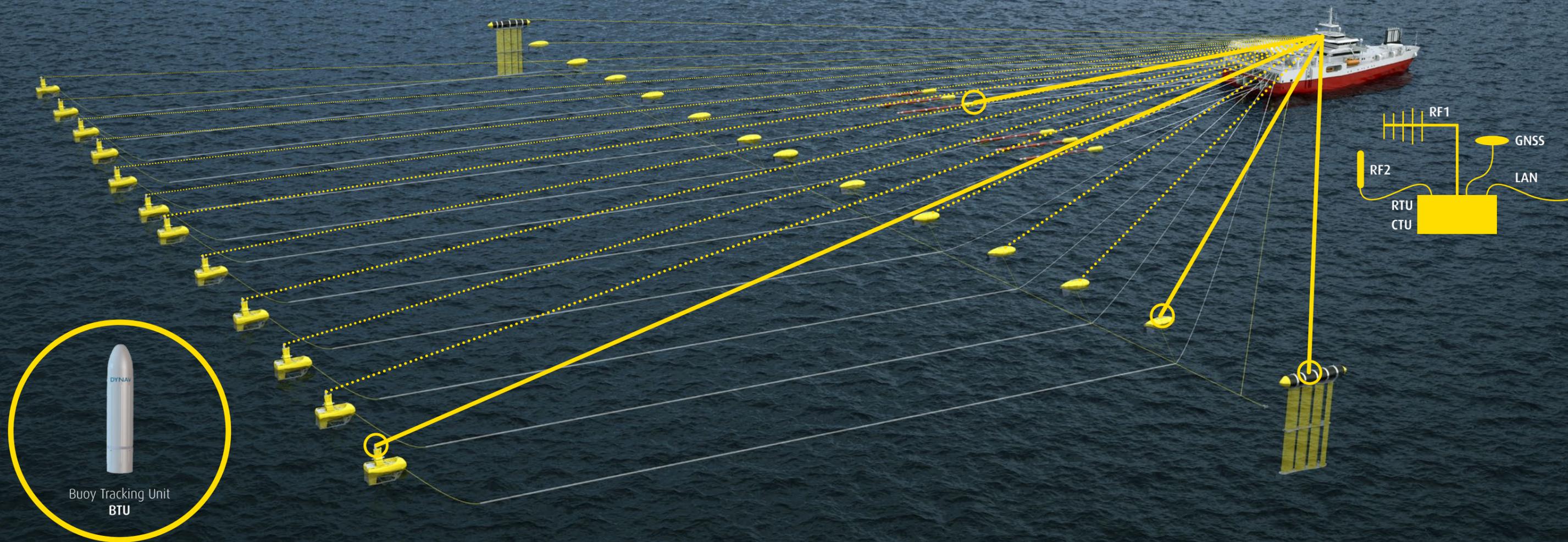
Gun Hang



# Float Steering and Positioning System (FSPS)

The Float Steering and Positioning System (FSPS) is a new, unique and patent filed system for monitoring, steering and positioning of towed floating systems. The system consists of a number of individual complete FSPS units including a control- and monitoring system, operated from the vessel's control room and/or the deck.

Each FSPS unit is connected to the vessel by a cable which provides electrical power and data communication for steering and control purposes. The position for each FSPS unit is fully monitored from the vessel, where the buoys accurate position to the vessel is provided by the Dynav positioning system.



## Robust RTK Tracking

Dynav is the next generation GNSS tracking system for use in maritime navigation systems where reliable and accurate positions are required.

A rugged polyethylene housing, which combined with low weight and low power consumption make the Dynav tracking system ideal for seismic operations.

### RTU (Radio Tracking Unit)

Dimensions 19" rack unit, 1U high  
Power supply U:24Vdc/230VAC

#### UHF Communication:

Radio 403-473MHz/25kHz sep/1W  
RF range up to 3km (BTU-1)  
up to 10km (BTU-2)

#### GNSS performance:

GNSS band GPS L1,L2 L2C, L5  
GLONASS L1,L2  
Accuracy 3cm (3DRMS@1km)

### CTU (Central Tracking Unit)

Dimensions 19" rack unit  
Power supply U:24Vdc/230VAC

#### Features:

- DYNNAV RTK Software
- Control, configuration & monitoring
- Logging features
- QC analysis
- Navigation System Interface
- Radio and GNSS receiver interface

### BTU (Buoy Tracking Unit)

Power supply U: 9-30Vdc /P:4W  
Temperature Operating -15/+50°C  
Storage -25/+70°C

Shock 50g/10ms  
Dimensions BTU-1 L:520mm, Ø:150mm  
BTU-2 L:721mm, Ø:150mm  
Weight 4kg (BTU-1), 5kg (BTU-2)

## Dynav – positioning system

### Quality control

Constant monitoring of GNSS quality parameters offers a good and reliable indicator of the received position coordinates. An integrated channel spectrum analyzer enables technicians to locate ideal radio operating frequencies at the base position.

### Flexible installation

Dynav communicates with external devices and navigation systems through direct serial connection (NMEA) or IP-network. This gives great flexibility regarding installation of system units onboard the ship.

### Simulator based training

A standalone BTU simulator is available to feed Dynav data for training purposes or for validating integration with third party systems prior or during production deployment.

### Ease of configuration

Offering remote wireless configuration, Dynav handles configuration of radio parameters, GNSS parameters and BTU parameters without the need of connecting other devices or using other applications.

### User oriented GUI

The new Dynav graphical user interface focuses on presenting the most useful information during run time while still offering detailed configuration within a few mouse clicks. Users may at any time configure which BTU data to view and in what order.

### Error handling

Continuous monitoring and automatic recovery of communication failures reduces possible system downtime to a minimum. Extensive logging of system events is enabled by default and enables technicians to rapidly correct possible fault situations.



## Device Tracking and Control – DTAC

The DTAC marine is a high performance – high reliable communication device for remote applications. It is approved according to the marine regulations EN 60945 and DNV 2.4 Environmental requirements ensuring reliable operation in marine applications.

The DTAC can track and interface your equipment onboard ships or in remote installations and give you a “hands on” experience all around the world. The power consumption is very low and the DTAC can be running from a backup battery for years depending on the chosen data rate.

The DTAC Web-page provides easy and intuitive user interface. Key information like positioning and data are presented in a map or graphically. The DTAC is configurable through the web page with respect to data transfer rate and geofencing settings.

Geofencing functionality enables user to receive information if the DTAC moves outside a preset geofence.

### Applications

- Remote control and monitoring
- Diagnostics
- Tracking
- Geo Fencing
- Event triggering and synchronization
- Buoys



### Buoy Tracker

This product can be configured with combinations of Iridium satellite tracking (DTAC), AIS (Automatic Identification System) and synchronized signal lights. The unit can be powered by an internal battery or by an external source (12–24Vdc).

AIS	Type 1 and Type 3 AIS AtoN
DTAC	Iridium tracking unit
PWX LED	Signal light, White LED 10 km
Battery	120Ah/18V Alkaline





## Electronic Systems

The Tail Buoy Charge and Control system from PartnerPlast is a fully integrated solution which provides the operator with total control and all monitoring options of charging sources, battery conditions and load statuses. The parameters are accessed remotely through radio communication. The ELBOX maintains the correct charge and load parameters of the battery in all operating conditions.

Solutions for motor control outputs which can be used for rudder, flaps or antenna controls are available. A compass and GPS, in addition to tilt sensors, can be integrated in the system to enable steering and positioning of the Tail Buoys.

### Custom-made functionality

Custom specified functionality and interfaces can be integrated into the system both for the Tail Buoy and on the topside control system.

PartnerPlast supplies selected products with RFID. The RFID is unique, and can be used by the customer for logistic and tracking purposes.

Different types of RFID tags are selected and suited with respect to the type and usage of the product.



Light  
High intensive signal lights with U-code and GPS sync



RFID



Battery  
Waterproof battery with integrated temperature sensor and fuse



Elbox

## Green Line

We are committed to use the latest technology to reduce global pollution, improve the health and safety of personnel and to increase our customers efficiency. The greenline series of products have increased focus on health, safety and environment, using environmental-friendly powersources, meets ROHS and recycling requirements and have low battery weight compared to traditional solutions.

### Greenline elbox intelligent charger

Our greenline elbox has solarpanel, aqua generator and streamer input. It also has battery protection, remote monitoring and control system.

### Greenline battery technology

Our greenline battery has low weight, and are environmental-friendly and safe. It is produced of Lithium Iron Phosphate-LiFePo4.



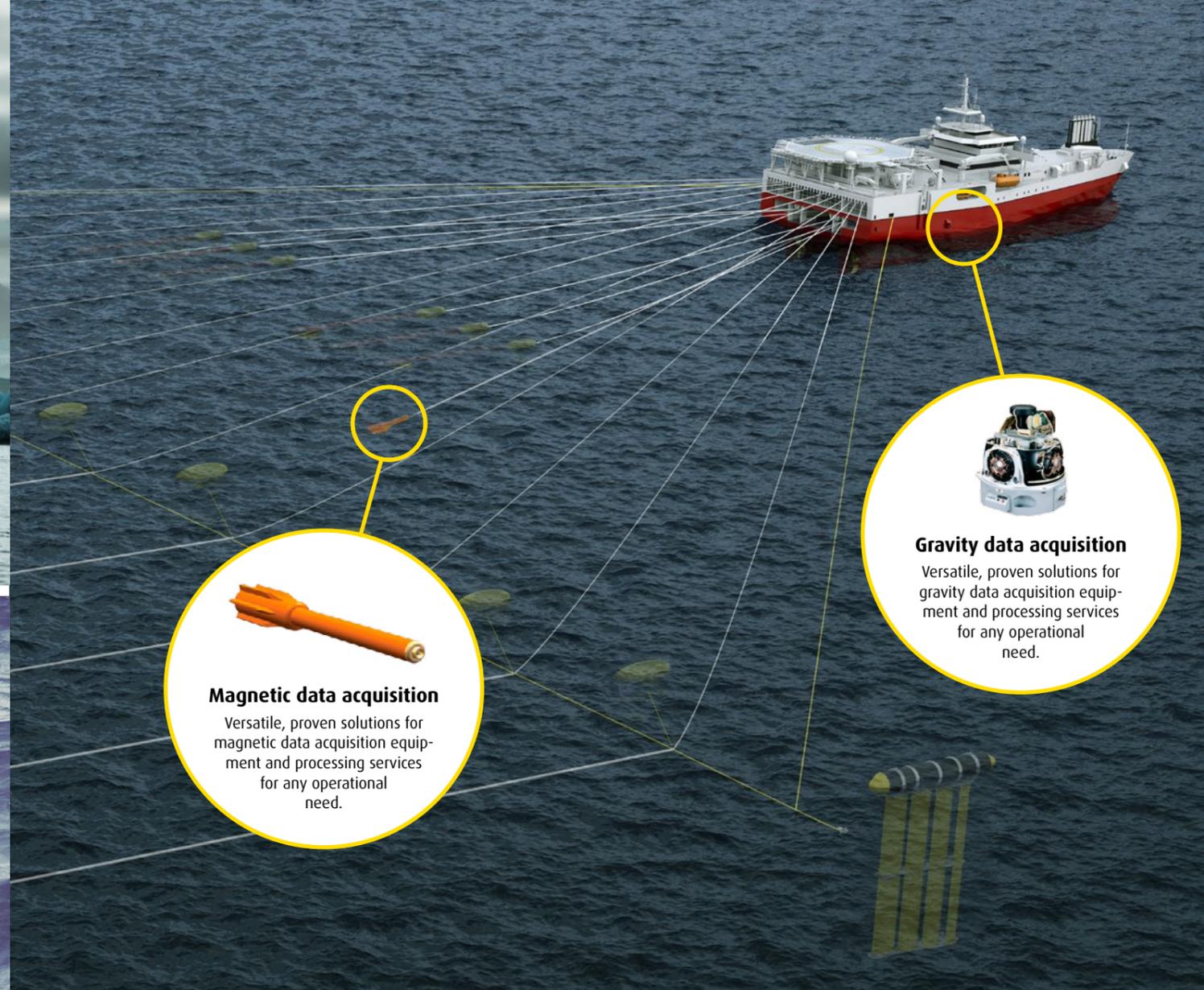
greenline®



Elbox



Battery  
Waterproof battery with integrated temperature sensor and fuse



**Magnetic data acquisition**  
 Versatile, proven solutions for magnetic data acquisition equipment and processing services for any operational need.

**Gravity data acquisition**  
 Versatile, proven solutions for gravity data acquisition equipment and processing services for any operational need.

## Consulting Services

The continuing expansion of regulatory oversight/restrictions have generated a need for environmental service professionals to mitigate the impact of geophysical operations on a variety of protected resources

We provide reliable, cost effective solutions for equipment and highly experienced and skilled environmental personnel to fulfill any compliance requirements by relevant authorities worldwide.

**We offer:**

- Marine Mammal Observers (MMOs)
- Passive Acoustic Monitoring (PAM) systems
- PAM Operators
- PSO Training
- Project Personnel

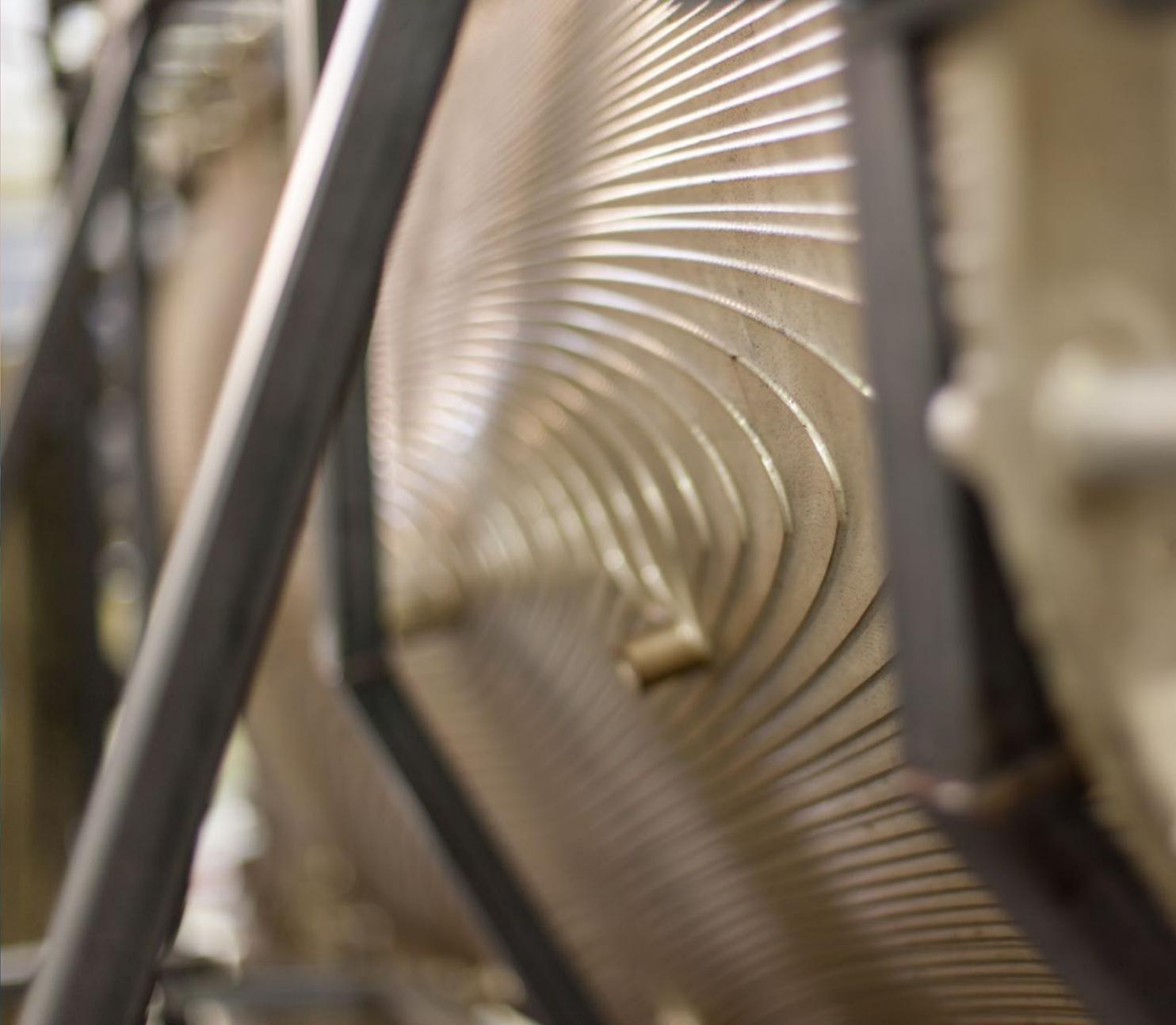
## Field Services and Navigation

The increased geophysical activity in frontier areas has generated renewed interest in potential field data. We provide cost effective, flexible solutions for equipment and highly competent personnel to fulfill any acquisition and processing needs worldwide.

**We offer:**

- Magnetometers
- Gravity Meters
- Marine to land gravity ties
- Winches for magnetometer cables
- Data Processing
- Data Management
- Experienced Operators
- Project Management
- Rigging
- Navigation





## Service & Support

- Installation and technical support
- Plastic welding
- Electronic
- Software and hardware support
- 3D printing
- Pressure testing, 600 bar

## Engineering

PartnerPlast has a professional skilled team with the capacity to develop and design new products. The product development process are covered through these steps:

- Concept design
- Production and testing of prototype
- Final design ready for production

Our technical capacity covers more than the shaping of plastic products. PartnerPlast has a long history in successful and innovative development of complete product combinations. Our plastic components are used in combination with steel and aluminium structures as well as electrical or electronic systems.

## Other products/accessories



Storage box



Trolley  
The trolley fits Dilt Float/Nav Float 1000/1500/2000/2500 and Tail Buoy 1050. A wall mount is included.



Plastic welding equipment



Lead in Float



Transport wheel for different Dilt Floats



# PartnerPlast Offices



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