



Fast and light rheological profiling system

The **GraviProbe Rheology** is a free fall impact instrument, analyzing the underwater sediment layers during intrusion. Under its own weight it accelerates and penetrates fluid and consolidated mud layers.

The rheological conditions of the soil layers are determining the probe's dynamical behavior. The data acquired from on board accelerometers, inclinometers and pressure sensors is feeding a dynamical model which determines the rheological parameters (dynamic cone penetration resistance and dynamic undrained shear strength).

As a result the **GraviProbe Rheology** is able to distinguish the depth of the fluid mud and consolidated mud layers very accurately, even in gassy environments.

Operational simplicity

The high sensor data acquisition rates of up to 2 kHz in combination with a low drag housing results in the highest quality profiles at drop rates over 7 m/s. Due to its light weight the probe can be operated manually from a small vessel, platform or quay and limits the operational costs.

Developed to capture high quality rheological profiles of fluid and consolidated mud layers

Applications

Determination of the nautical depth in ports, harbors, seaways and estuaries

High accurate depth measurement, improving echo-sounder data

Complementary soil analysis during CPT and core sampling

Calculation of dredging sediment volumes

Mass balance calculation of dump areas

Classification of mud and soil structures

Benefits

Multiple parameters in a single instrument

Lightweight, compact and robust (no external sensors)

Fast, continuous and autonomous measurement

Accurate

Slim instrument, deep intrusion and limited disturbance of the medium

Insensitive for gassy or disturbed medium

Features

Simultaneous measurement of depth, dynamic cone penetration resistance and dynamic undrained shear strength

Fast sampling rate (2048 Hz)

Ethernet communication, wifi ready

Internal storage (microSD)

Long battery life (Li-Ion, 8 h autonomy)



Software

Import data

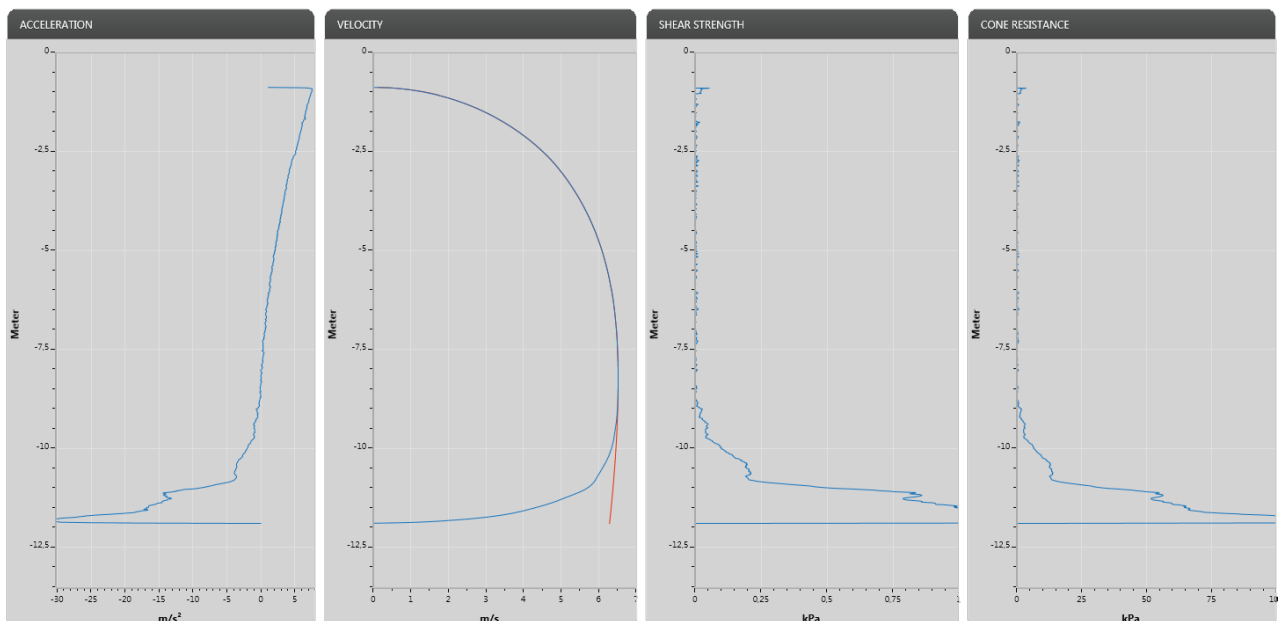
Process data

Visualise & export data

Configure GraviProbe

Configure & import GPS-data

Upload to dotOcean servers for advanced reporting (optional)



Specifications

Depth	Range	0 - 3.5*	bar
	Accuracy	0.01	%
Dynamic Cone Penetration Resistance	Range	0 - 100000	Pa
	Accuracy	1	%
Dynamic Undrained Shear Strength	Range	0 - 10000	Pa
	Accuracy	1	%
Maximum Impact	Range	0 - 70	G

Data

Acquisition	Sample Rate	2048	Hz
Communication	Ethernet		
Memory	Internal storage	Micro SDHC	FAT32

Electrical

Battery	Type	2x	Li-Ion
	Volt	3.75	V
	Ampere	2.2	Ah
Autonomy		8	hour
Charge Type	Power over Ethernet		

Physical

Material	Marine Grade 18/10 Stainless Steel (type 316) housing, polycarbonate & composite sensor components.		
Size	Diameter	50	mm
	Length	900	mm
	Weight	8	kg

Software

Desktop software supplied with Windows based software

The screenshot shows the Ocean GraviProbe Client Software interface. At the top, it says "Ocean GraviProbe Client Software" and "FFP10042F synchronizing". The interface is divided into several sections:

- PROBES:** Lists "FFP10042F GraviProbe 1" with a signal strength icon and "54".
- GraviProbe 1:** Shows a 3D model of the probe and a "LAUNCH GRAVIPROBE" button. To the right, it displays "FFP10042F", a battery icon at "5%", and a "100%" indicator.
- INFORMATION:**
 - SERIAL NUMBER: FFP10042F
 - BATTERY: 5% charged
 - DISKSPACE: 100% free
 - DROPS TAKEN: [blank]
 - LAST USED: [blank]
- SETTINGS:**
 - Name: GraviProbe 1
 - IP Address: 192.46.111.199
 - IP Subnet Mask: 255.255.255.0
- Data Table:**

ID	DATE	HOUR	LAT
3	2013-09-12	12:38	0.0000
2	2013-09-12	12:35	0.0000
1	2013-09-12	12:32	0.0000
3	2013-09-05	10:20	0.0000
- Buttons:** "FORMAT" (red) and "UPLOAD" (blue).
- Status:** "Disconnected" with a Wi-Fi icon.

*depth range can be adjusted (default 3.5bar)



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