Echoes 3 500 offers high-resolution seismic reflection data to characterize sedimentary architecture and geological features. Echoes 3 500 is available with one (T1) or three (T3) transducers, allowing a wide range of operational conditions from shallow to deep ocean environments. Echoes 3500 systems enable river, lake and ocean surveys regardless of the seabed topography.

**FEATURES**

- Spectrum coverage of 1.7 to 6 kHz
- T1 portable Chirp system
- Vertical resolution 20 cm
- Penetration up to 150 m in clays
- Penetration up to 20 m in sand
- T1 one-man portable system
- Pole- and hull-mounted systems
- 2-way T1/T3 modular configuration

**APPLICATIONS**

- Pre and post dredging
- Sedimentology and paleoseismology
- Archeology and Geo-archeology
- Object detection buried (boulders, pipelines)
- De-risking survey

**BENEFITS**

- True flat bandwidth ultimate resolution capacity and power efficiency
- Perfect positioning and heave compensation
- Compatible with any bathymetric echosounder

**DELPH SEISMIC SOFTWARE**

- All-in-one optimized geophysical processing and interpretation
- Easy access to all data collected for geologists and geophysicists
- Compatible with leading industry sensors and formats
- Best possible 2D/3D QC
- Visualization and reporting capabilities

**DELPH SEISMIC SOFTWARE**

- All-in-one optimized geophysical processing and interpretation
- Easy access to all data collected for geologists and geophysicists
- Compatible with leading industry sensors and formats
- Best possible 2D/3D QC
- Visualization and reporting capabilities

**APPLICATIONS**

- Pre and post dredging
- Sedimentology and paleoseismology
- Archeology and Geo-archeology
- Object detection buried (boulders, pipelines)
- De-risking survey

**DELPH SEISMIC SOFTWARE**

- All-in-one optimized geophysical processing and interpretation
- Easy access to all data collected for geologists and geophysicists
- Compatible with leading industry sensors and formats
- Best possible 2D/3D QC
- Visualization and reporting capabilities
Technical specifications

Array configuration T1//T3  
1 // 3 tonpilz transducers mounted on a plate

Operational frequency range  
1,700 Hz - 6,000 Hz

Mean acoustic level T1//T3  
195 // 203 dB (ref 1μPa@1m) @ 2 kVA

RVS (Receiving Voltage Sensitivity) (ref. 1μPa) T1//T3  
-172 // -163 dB

Beam aperture @ 3.5 kHz  
45°

Vertical resolution (c=1,500 m/s)  
20 cm

Mechanical specifications

Echoes 3500 Array

Recommendation for water depth below transducers T1//T3  
1 to 200 m // 1 to 1,500 m

Height  
384 mm

Diameter T1//T3  
450 // 680 mm

Weight in air / water T1//T3  
57/42 kg // 160/120 kg

Echoes 3500 Topside unit

Signal emission power / Echoes mean power  
2 kVA / 350 W

Length / width / height  
482 mm / 482.6 (19’’) mm / 177 (4U) mm

Weight  
15 kg

Mounting  
Rack-mounted

Deck cable length T1//T3  
20 m // 50 m

Case Study in sandy environments

Geophysical characterization and reports using Delph Acquisition and Interpretation Softwares

<table>
<thead>
<tr>
<th>Echofacies description</th>
<th>Geological interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>U1 Homogeneous weak amplitude facies</td>
<td>Sediment deposits soft sand and silt</td>
</tr>
<tr>
<td>R1 Irregular high amplitude reflector</td>
<td>Top of the bedrock</td>
</tr>
<tr>
<td>U2 Chaotic high amplitude facies</td>
<td>Bedrock</td>
</tr>
</tbody>
</table>

Geophysical survey dataset

Bedrock mapping

Volume calculations