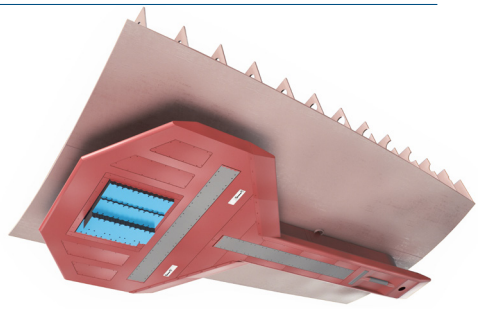
ParaSound

Deep-Sea Parametric Sub-Bottom Profiler



Unsurpassed data clarity

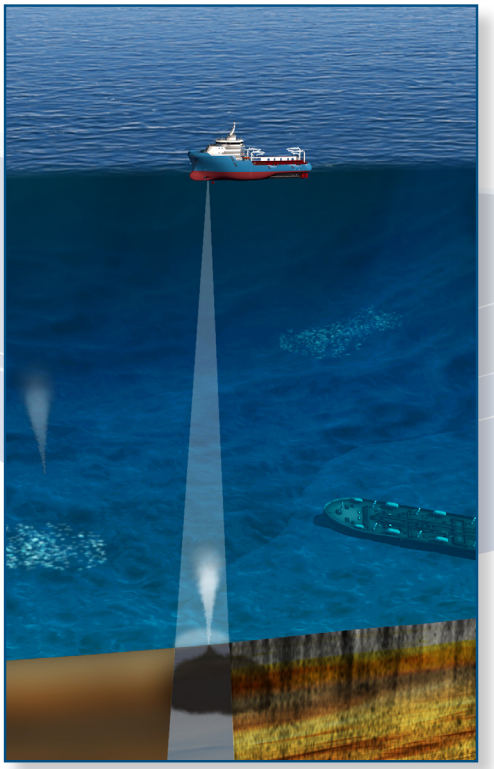
The Teledyne Parasound delivers exactly this – unsurpassed data clarity – as the most versatile and best in class marine sub-bottom profiler providing full ocean depth range and >200 m sediment penetration.

With its 4.5° beam width, due to its 15 cm vertical sampling and especially because of innovations like its intelligent Quasi Equi-Distant (QED) multi-ping, the ParaSound delivers a unique data resolution and data density that unveils sub-sea structures at an unrivalled sharpness. The unsurpassed data clarity, the ParaSound's versatility, its robust operations even under severe conditions on sea, make the Teledyne ParaSound the ideal tool for ocean science and offshore surveys.

The ParaSound has been pushing the limits of hydro-acoustics again and again. From the first employment of parametric technology in 1986 in a deep water sonar, throughout permanent innovation, the ParaSound has continued to improve and strengthened its position as the benchmark for marine sub-bottom profiling. Ultimately, it is the users who benefit most from always best in class data quality and performance, and the ParaSounds broad versatility in applications as sediment profiler, in water column imaging or for full motion stabilized narrow singlebeam echosounding.

Key Features

- Depth range 11000 m
- Max. bottom penetration >200 m
- 15 cm typical vertical sediment resolution
- 0.5 – 7.0 kHz sub-bottom profiling
- Intelligent QED multi-ping



PRODUCT BENEFITS

- The ParaSound is the most versatile tool for ocean science and offshore survey in sediment profiling, water column imaging, for full motion stabilised narrow singlebeam echosounding.
- High resolution geophysical surveys are possible in parallel to seismic or bathymetric survey campaigns at virtually any sea-state with the hull-mounted ParaSound in contrast towed sonar solutions.
- With its 4.5° beam width, due to its 15 cm vertical sampling and especially because of innovations like its intelligent Quasi Equi-Distant (QED) multi-ping, the ParaSound delivers a unique data resolution and data density that unveils sub-sea structures at an unrivalled data clarity and reliability.

TELEDYNE MARINE

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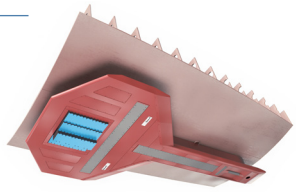


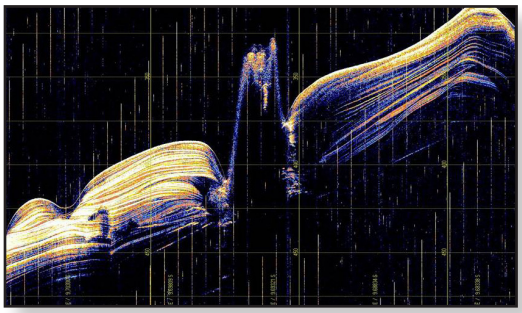
APPLICATION

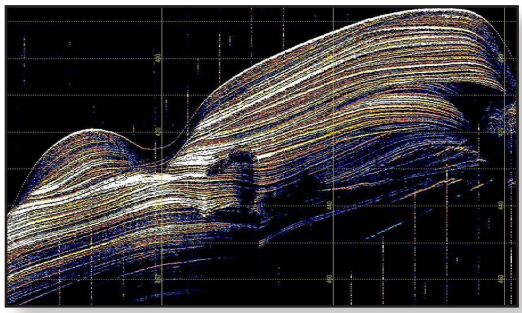
Fields of application in **Ocean Science**:

- Sedimentation processes such as channel levee systems, sediment slides, deep ocean currents, sub-sea impact of glacial processes
- Search for marine resources: detection and exact localisation of gas hydrates via in-one-survey gas seep mapping, sub-sea fault imaging, in-sediment free gas and gas hydrate highlighting
- Climate research: impact of regional ocean climates and currents on sedimentation processes
- Sub-seabed mapping of geological structures such as mud volcanoes, gas seeps, hydrothermal vents, nodule fields

Fields of application in **Offshore** pre-survey and seabed monitoring:

- Super high resolution sediment structure mapping to identify sites for constructions or potential geological risks to infrastructure
- Applicable in parallel to seismic or bathymetric survey campaigns at virtually any sea-state due to vessel based operations not depending on towing equipment
- Support of cable lay to secure ploughing equipment
- Detection of buried pipelines and archeological spots
- Pre-investigations for drilling activities
- Acoustic extrapolation of sediment sampling results





Angola Basin, dense sediment layering recorded by METEOR 2008 (450 m water depth, 50 m penetration)

PARASOUND SPECIFICATIONS

Sediment penetration/ depth range	Penetration P70 >200 m Depth range 10 – 11000 m
Frequency bands	Primary High Frequency: 18 - 24 kHz Parametric Low Frequency P70: 0.5 - 7 kHz Parametric High Frequency: 37 - 42 kHz
Multi-ping and ping rate	Max 16 simultaneous pings QED multi-ping, Pulse train multi-ping Max 16 Hz ping rate
Pulse modulation	0.17 – 25 ms pulse lengths; CW or frequency modulated (Chirp) pulses
Max transmission power	P70: 70 kW
Transmission source level	P70: 245 (206) dB (primary/parametric)
Beam resolution	4.5°
Receive channels	P70: 128 transducer, 288 ADC

Resolution	Max. range resolution 6 cm Max. output sample rate 12 kHz Sediment resolution: down to <15 cm
Water column recording	Max. 6 cm vertical resolution
Operation modes	Parametric & conventional sub-bottom profiling Narrow-beam single beam echosounding
Motion correction	Roll ±15° stabilised Pitch ±10° stabilised Yaw ±10° stabilised Heave corrected
Data format	ASD, PS3 and SEG-Y

Acoustic performance (sub-bottom penetration, depth range) is depending on local bottom and environmental conditions.

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