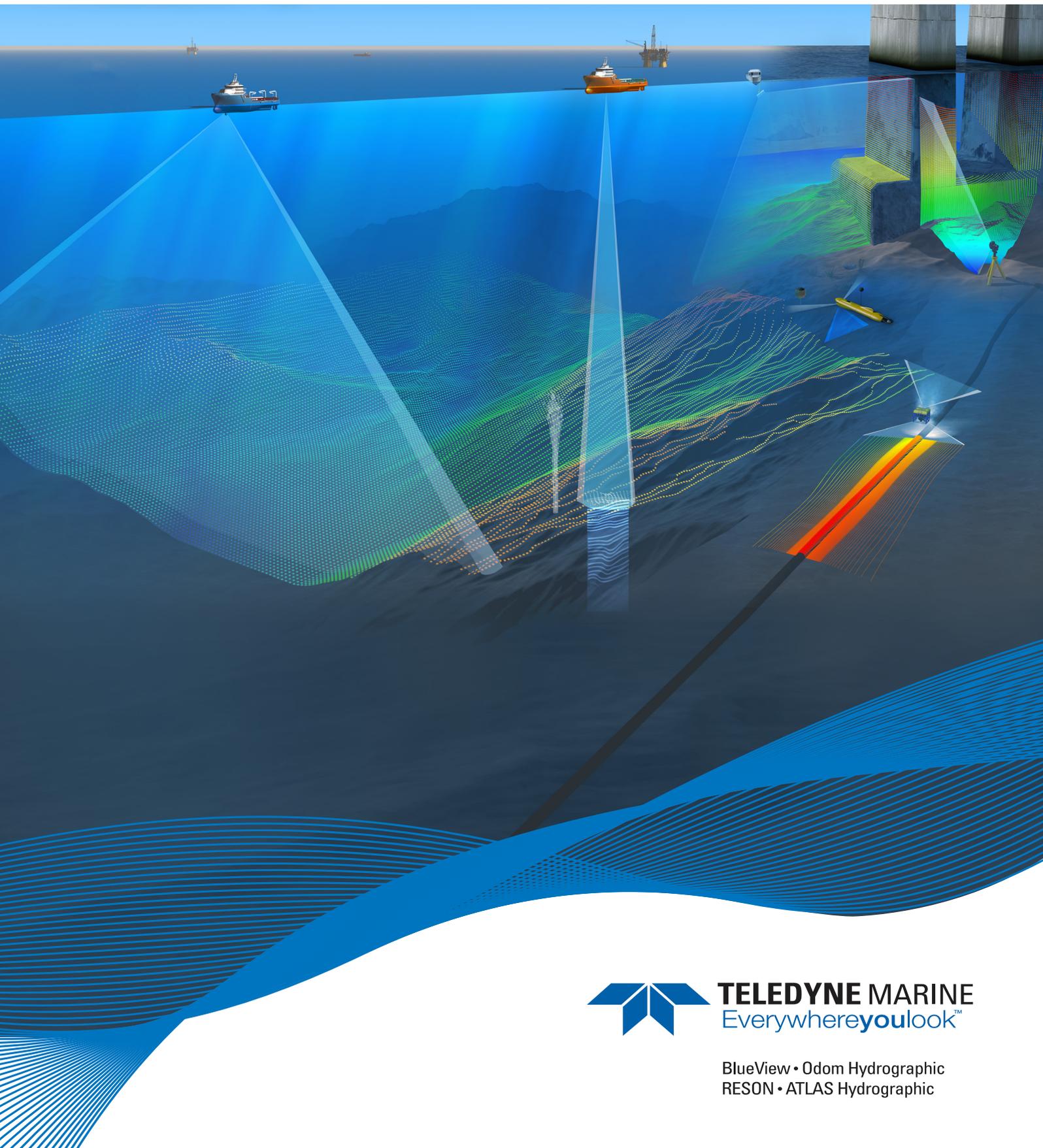
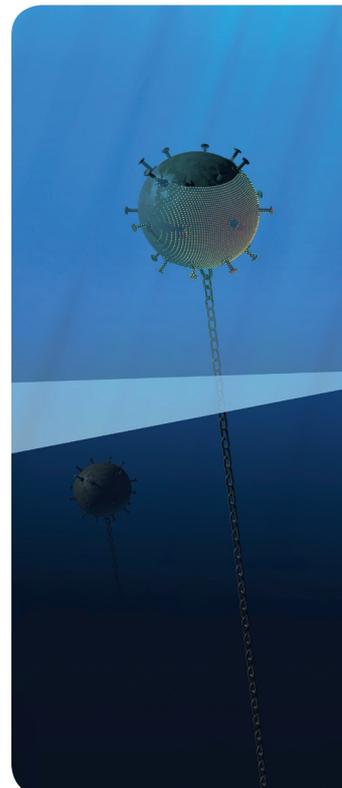
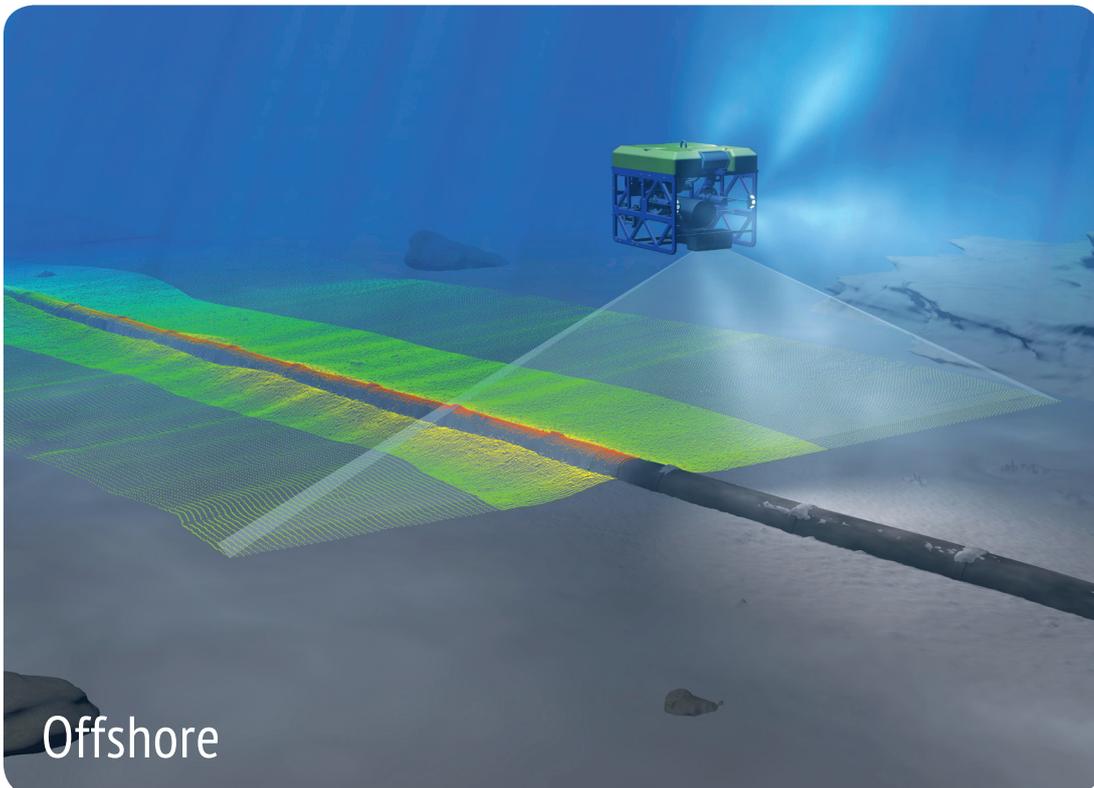
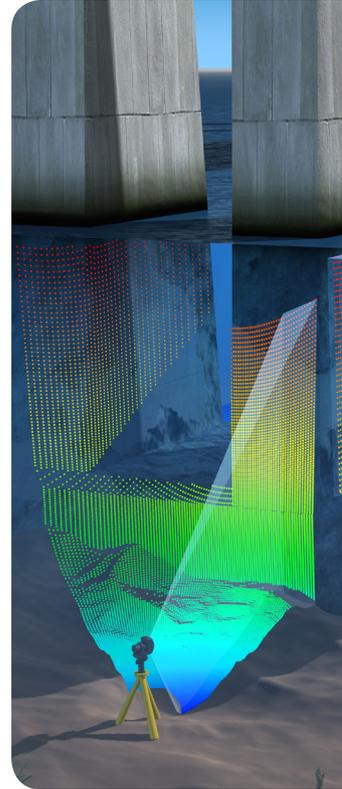
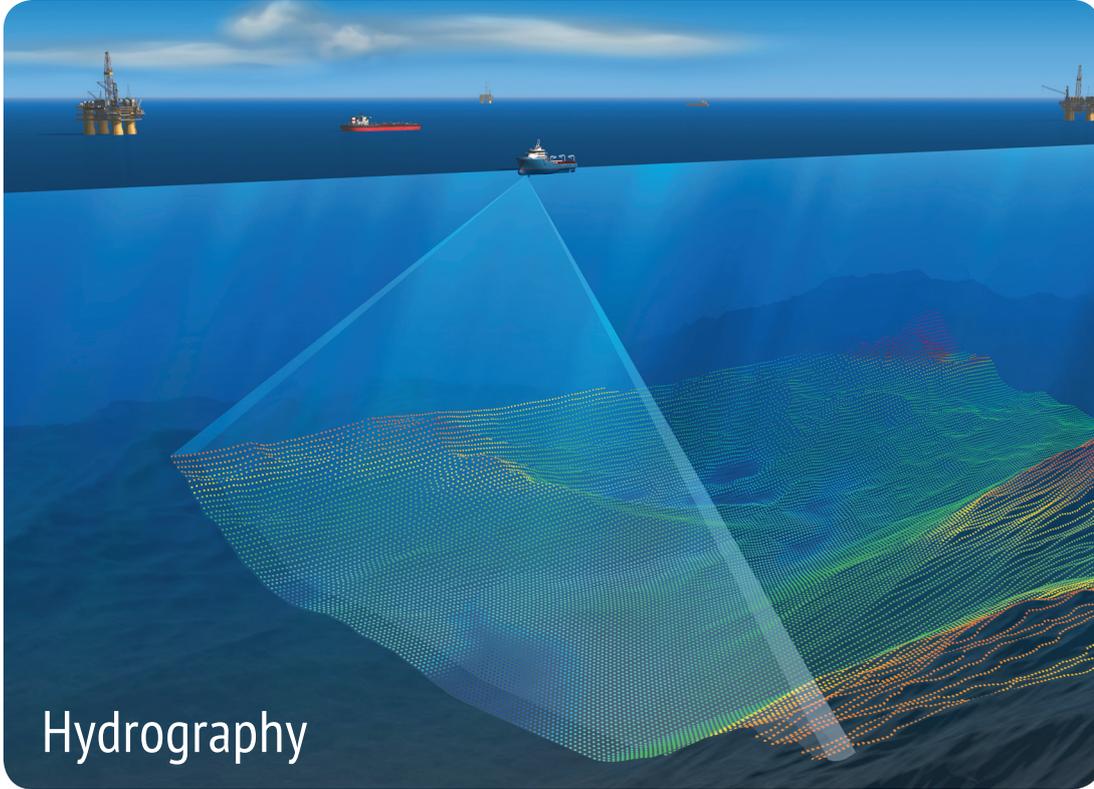


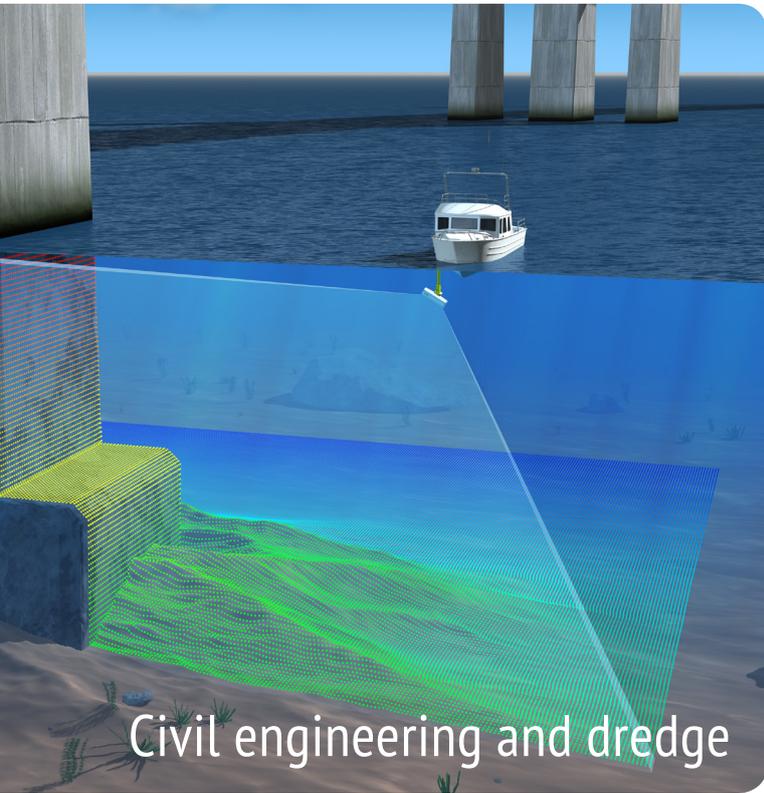
All the sonars you need, in one place



TELEDYNE MARINE
Everywhereyoulook™

BlueView • Odom Hydrographic
RESON • ATLAS Hydrographic





All the Sonars you need, in one place	4
Hydrography	6
Offshore	11
Civil Engineering & Dredge	15
Defence and security	18
Customized solutions	22
Product Overview	25
Multibeam Echosounders	26
2D Forward looking Sonars	28
3D Mechanical scanning Sonars	29
Singlebeam Hydrographic Echosounders	30
Sub Bottom Profiler	32
Transducers & Hydrophones	33
Sound Velocity Sensors	34
Dredge Guidance Solutions	35
Software Solutions	36
Engineering Services Solutions	39

All the Sonars you need, in one place

Teledyne RESON, BlueView, Odom Hydrographic and ATLAS Hydrographic are part of the Teledyne Marine Acoustic Imaging Group (TMAIG). With more than 35 years of experience, TMAIG develops some of the world's most sophisticated sonar technology.

TMAIG has manufacturing, R&D, sales and after service functions at the headquarters in Denmark as well as in Holland, Germany, U.K and the USA. Furthermore it has sales offices in Singapore and in Shanghai and supports local sales through a network of distribution partners in more than 47 countries.



- Sites
- Service Partners



What you should know about us

Teledyne Marine is owned by Teledyne Technologies Inc., a company listed on the New York Stock Exchange (TDY).

TMAIG is part of Teledyne Marine, a substantial group of companies providing products and services to the oceanographic community.

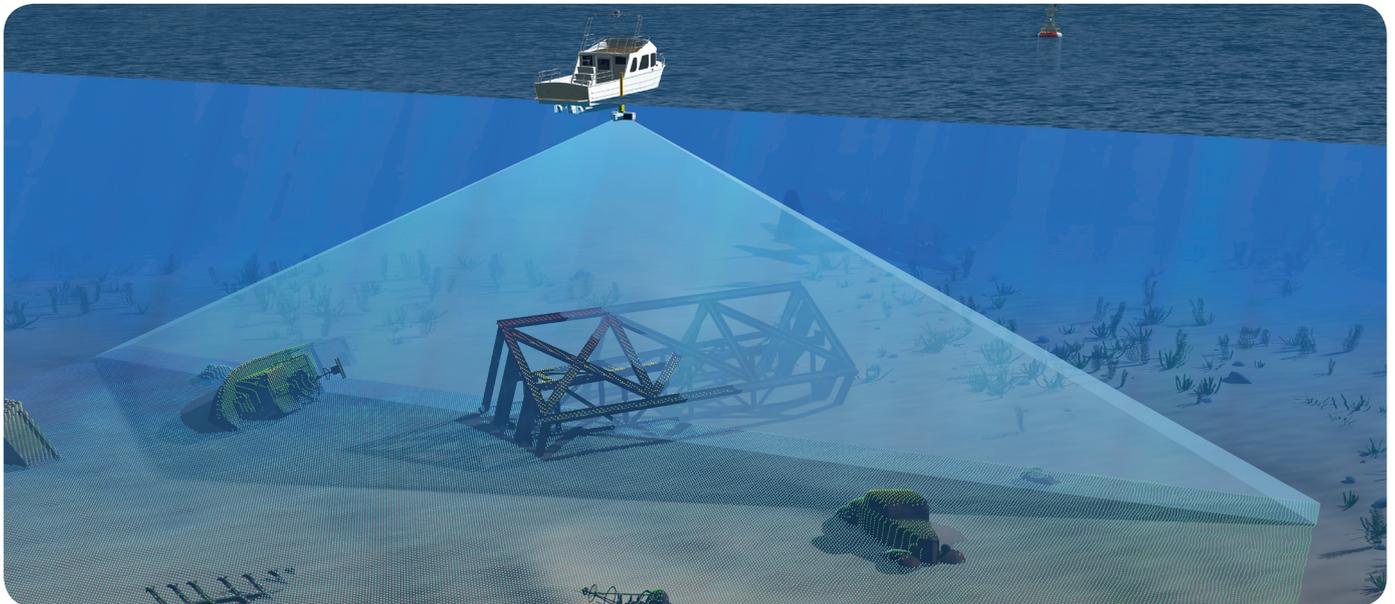
The group offers the strongest collective product portfolio in the market for subsea acoustic imaging and multibeam echosounder solutions.

We offer sonar solutions in a variety of application areas including offshore, hydrography, civil engineering and dredging as well as defense and security.

Our Engineering Services department has more than 40 engineers and hydrographic surveyors focused on providing close support to our customers, wherever they are and whatever the circumstances. We operate out of six worldwide locations and we have extended our closeness to our customers with a global network of service partners.



Hydrography



Introduction

Within Hydrography we provide a combined product portfolio to cover all needs to perform the survey task at hand, from Single-beam Echosunders or the entry level MB1 Multibeam system by Teledyne Odom Hydrographic, scaling up to high resolution systems providing more detail and resolution like the SeaBat T50-P from Teledyne RESON, or high-end deep water Multibeam systems like the HydroSweep from Teledyne ATLAS Hydrographic, we have your requirements covered.

Whether you need a Multibeam Echosounder or a full turnkey hydrographic solution we are able to match your requirements for size, ease of use and performance with a quality package that matches your budget. Our systems have you covered at nearly any depth, from the SeaBat 7150 multibeam echosounder on the largest ocean going vessels in the deepest oceans, to the SeaBat T-50-P for high resolution surveys for inland or coastal areas and also available for use on ROVs and AUVs at 6,000m depth. The HydroSweep product family focusses on hydrographic surveying as part of ocean science projects, down to full ocean depth, for searching for resources in the ocean basins and surveillance of the continental slopes for disaster management.

We offer all accessories to deliver a complete solution, ranging

Application areas:

Seafloor Mapping Ports & Harbors
Route Surveys Marine Research

from sound velocity sensors, brackets, mounting kits, gondolas and cables to motion compensation and INS systems including processing station, installation and final hand-over to qualify and secure the final system performs optimally.

All Multibeam and Singlebeam Echosounder products can interface to the major software processing packages, the data output being easily imported into same, as the datasets and interfaces are open to any software provider. In a turnkey solution, we offer either 3rd party software packages or provide our own Teledyne PDS acquisition and processing software (see later chapter dedicated to Teledyne PDS).

We are a total solution provider for Hydrographic solutions so you can rest assured that your investment will be secure and supported by a global organization dedicated to Hydrography with an Engineering Service team covering the world.

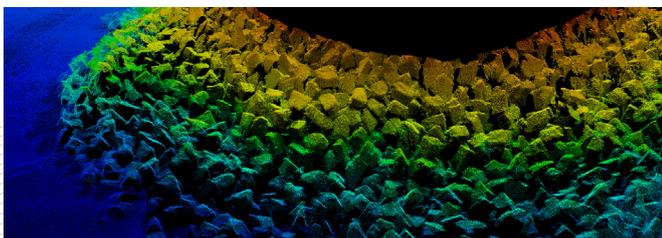
Seafloor Mapping

Dedicated to the charting of the vast oceans we have a complete range of Multibeam Echosounder products focused on providing accurate and detailed bathymetry to suit every need.

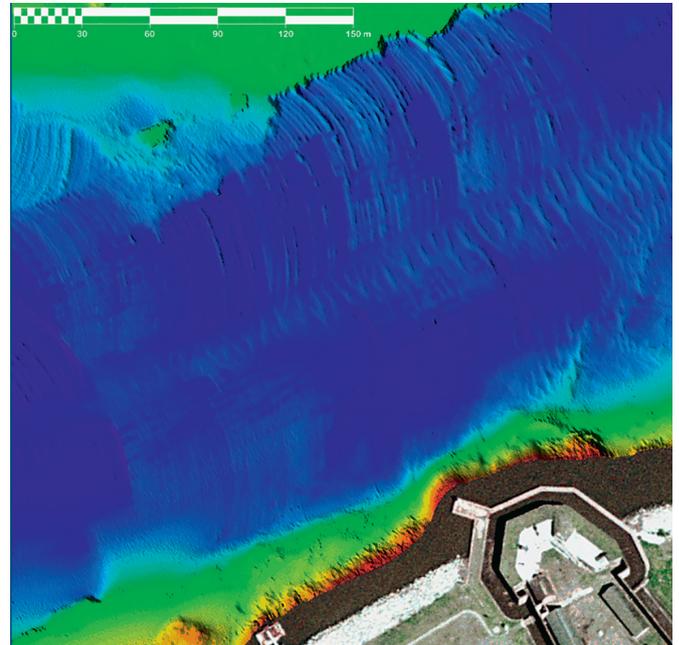
If your requirements are focused on highly portable and integrated systems which can be frequently mounted and un-mounted on vessels of opportunity then our MB1 and MB2 products are the multibeam echosounders you need. MB1 is a cost-effective solution to make fast and effective surveys to map an area with limited effort and MB2 provides further coverage and improved data quality to fulfill more demanding requirements if needed. If you need more detail of the seafloor or further improved depth and swath performance, the SeaBat T-Series will provide a richer and more accurate dataset and supports a variety of features such as “Constant Seafloor Spacing”, multidetect and other additional performance enhancements, thus providing you exactly the right Multibeam Echosounder for the job and budget.

The SeaBat T50-P is Teledyne’s new flagship multibeam echosounder in the shallow water product range. The SeaBat T-series is based on a new scalable receiver platform with an extremely low level self-noise, providing the user with unprecedented clean data, reducing the data processing time and getting your survey deliverables ready in shorter time.

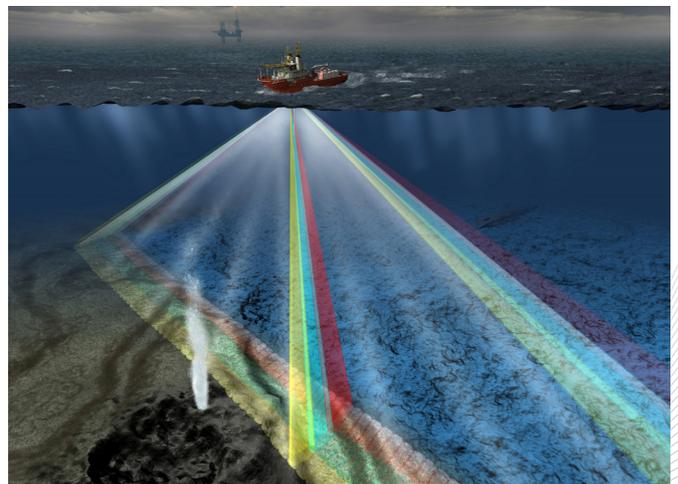
For applications such as continental shelf charting in support of territorial claims, and full ocean depth surveying in general, we have a wide range of deep water products to choose from. The SeaBat 7111, 7160 and 7150 cover the frequency range from 12kHz to 110kHz. Together with the HydroSweep product family with 50, 30 or 14 kHz the deep water products provide a range of resolutions and survey depths to match your needs. Systems range from larger gondola installed arrays to the more flexible SeaBat 7160 which is the most portable deep water sonar in its class and is suitable for pole mount installations.



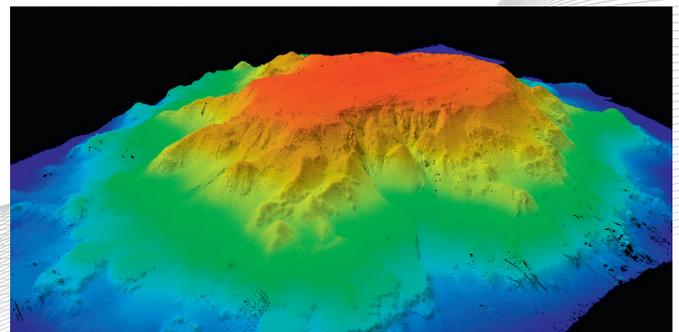
SeaBat T50-P data image, Shallow Survey, Plymouth, UK



Shallow water survey with MB1.



HydroSweep



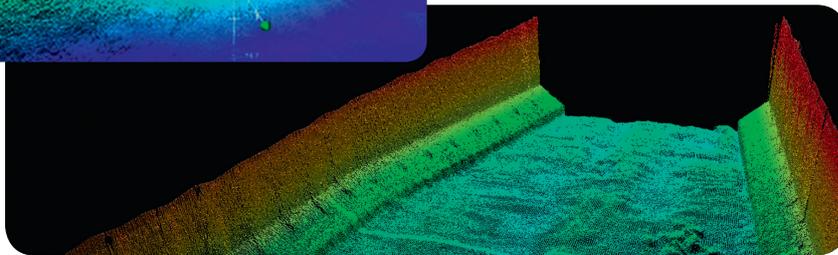
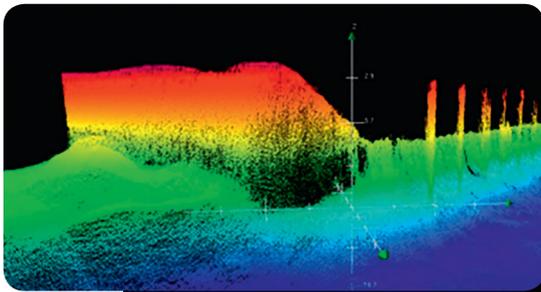
SeaBat 7150, colours represent depths from 400-4,000m. Courtesy of Odyssey Marine Exploration Inc.

Ports & Harbors

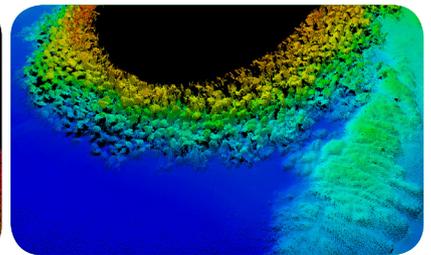
Ports & Harbors worldwide rely on our products for maintaining safety of navigation and least depth within the harbor and surrounding waterways. With our close connections and interaction with harbor customers through decades we have developed a strong product portfolio and features set dedicated to Harbors, with Software packages that support the operational workflow of our customers.

Larger harbor survey offices are typically offered an outward tilted dual head configuration of either the high performance SeaBat 7125-SV2 or the new SeaBat T50-P. The latter offering full frequency agility from 190-420kHz in full rate dual head mode, providing significantly improved swath performance and reduced survey time under extreme conditions.

Harbor structures, Odom MB1.



SeaBat 7125-SV2 – Full Rate Dual Head – Wall Data – Color by Depth.



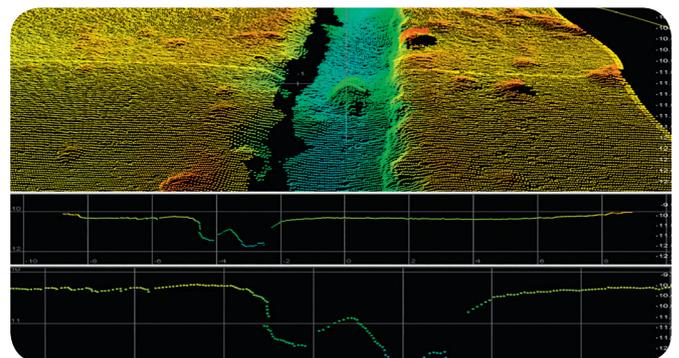
MB2 data image, Shallow Survey, Plymouth, UK

With total solutions, installation and continuous support we offer the Harbor authorities a reliable survey solution to robustly ensure least depth and the detection of uncharted navigational hazards in accordance with IHO requirements. The high resolution of the SeaBat 7125-SV2 or the SeaBat T50-P will reveal even the smallest navigational hazards on the seafloor such as trees, boulders, metal girders, bicycles and other similar objects often discarded into harbors. Today most harbors in Europe rely on the SeaBat series as their survey tool of choice. If the harbor surveyor knows the seabed and dynamics of the sediments, currents and material movement over the seabed, and least depth is well established for typical traffic in the area, then a more cost efficient solution such as the MB1, MB2 or SeaBat T20-P may be applicable. Teledyne is experienced and able to consult customers on their requirements and suggest alternative solutions.

Our software solution Teledyne PDS is often the preferred acquisition and processing software for Harbor authorities. It integrates seamlessly with all our products, and it contains a number of Harbor specific functions developed in close cooperation with leading Harbors.

Route Surveys

Route surveys are a major application for multibeam echosounders which are used to assess the suitability of a corridor for cable or pipe-laying, and allowing the avoidance of unwanted features such as rocks and steep or unstable terrain. The SeaBat 7125 or the SeaBat T50-P is optimal in shallower near-coastal areas or in deeper water when deployed on a tow-body or AUV. In deeper waters, for pipe or cables crossing oceans, we typically recommend either the SeaBat 7160 or 7150 which has enhanced deep water capabilities and can scale to the resolution requirements of the job.



SeaBat 7125 Trench survey

Marine Research

Being on the forefront of technology moving the boundaries of what is possible with each product generation we have traditionally played a big role within research – both by supplying products and solutions to the community, but also through our many research programs in cooperation with universities and governments institutions.

Our products are utilized in many ways – several not imagined by ourselves when developing the products such as sonars used for long term monitoring of hydrocarbon vents at ocean depth, with flow analysis and special acoustic backscatter output as used by researchers off the coast of Washington State, USA.

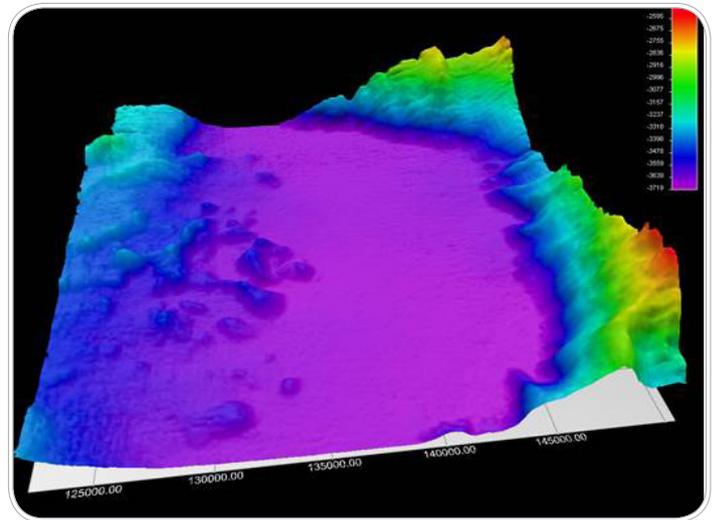
We provide ultra-sensitive Hydrophones for researchers worldwide, either for applications in the field, or due to the high performance and stability as reference hydrophones to calibrate other acoustic sensors. We take pride in our leading role in the community and participate actively with papers and in symposiums to stay at the forefront of technology.

Several products are applicable to the research community from passive acoustic monitoring and measurements to active sonar imaging, which is often accomplished by using a SeaBat 7128 or BlueView P900 or similar forward looking sonars to detect and analyze fish or mammals behavior in coastal areas.

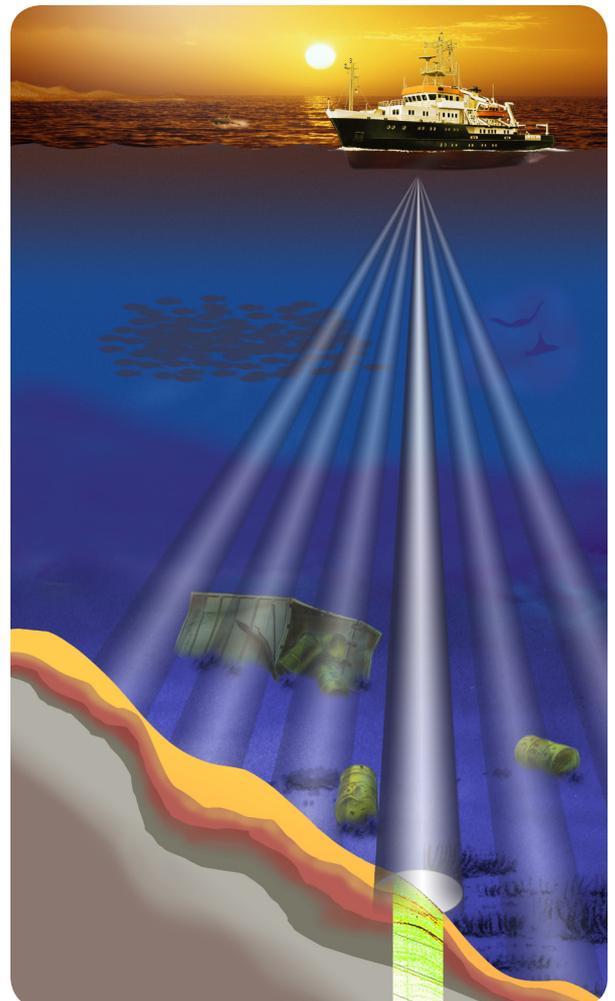
Parasound is the most advanced hull mounted parametric sub-bottom profiler in the market. It utilizes the parametric effect to generate a low frequency secondary signal by emitting two primary signals of higher frequencies to the benefit of deep sediment profiles with high resolution.

Applications are in ocean science ranging from geology and geophysics to biology and climate research: prominent examples are search for gas hydrate and hydro thermal vents. Potential applications are also prior marine construction to search for buried rocks prior deep sea cable/ pipe routing or for geological / glacial research.

Deep Ocean sediment data collected by the Parasound is utilized by a broad range of disciplines including marine geophysics, geology, biology and oceanography.



Bathymetry recorded by Taiwan Ocean Research Institute using HydroSweep in approx. 3000m depth.



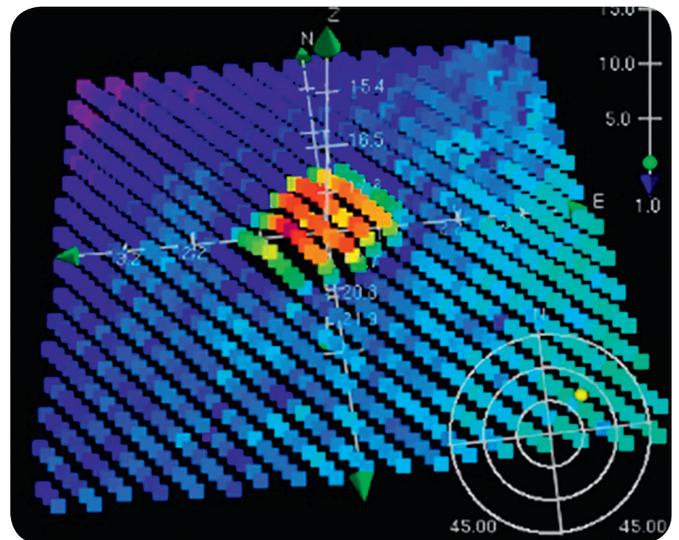
ParaSound Sub-Bottom profiler

Hydrographic Features in Focus

Constant Seafloor Spacing*

“Constant Seafloor Spacing” is a unique feature that makes it possible to set the distance between Bottom Detection points on the seafloor to fulfill a given specification, for example if the requirement is ‘3 hits per meter’ then the operator sets a spacing of 0.3m between bottom detection points. The SeaBat system will automatically keep this distance, also when the depth changes, obviously limited by the physical limits of the system. This is a productivity enhancing feature as the datasets are uniform with an equal distribution of points, thus reducing post processing time. This will lead to reduced operational costs and give faster output to the final end-customer.

**Applicable to SeaBat T20-P, SeaBat T50-P and SeaBat 7125*



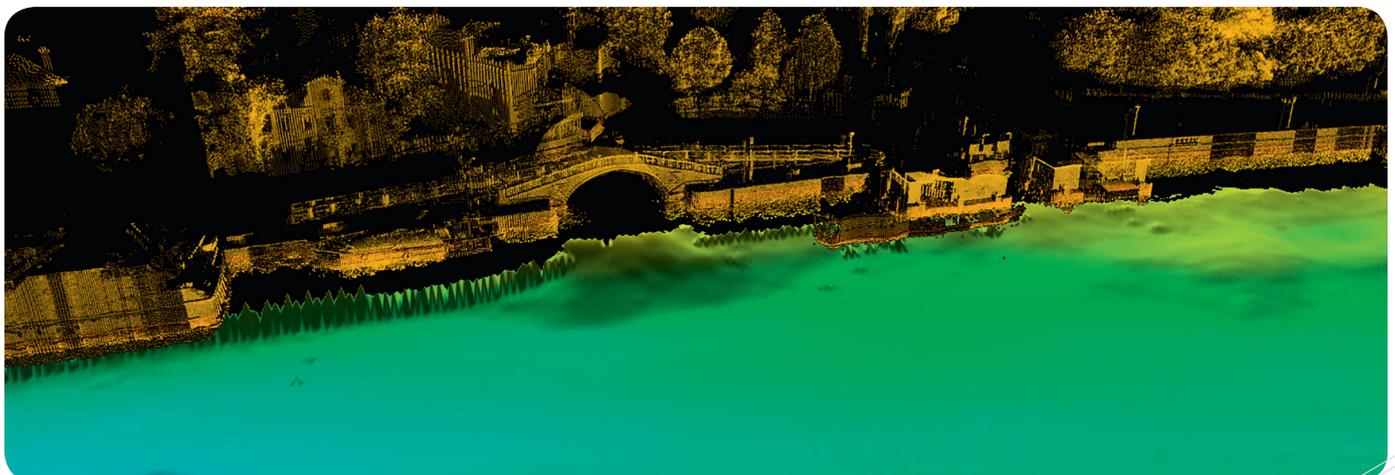
Example of Constant Seafloor Spacing.

Teledyne PDS Software for hydrography

Teledyne RESON's in-house developed Teledyne PDS is designed to efficiently create high quality, fast results – whether it is for multibeam surveys, singlebeam surveys, construction or dredging works.

Teledyne PDS for Multibeam Surveys provides the functionality for survey planning, data acquisition, data processing, editing, vol-

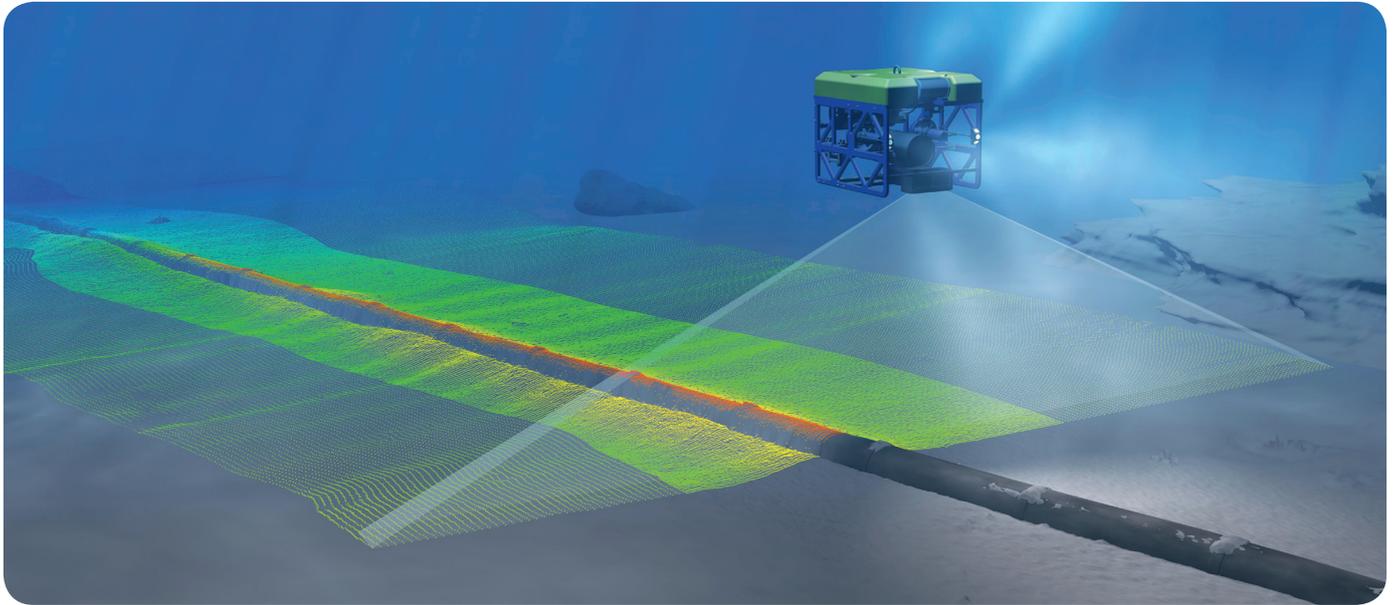
ume calculations and chart production. This turnkey solution offers the surveyor and helmsman a strong tool to carry out the Multibeam survey efficiently. Progress is shown realtime in 3D views and planviews using a color-coded Digital Terrain Model. Various filter settings can be applied to the Multibeam data online, thus providing real time data processing. QC displays reassure the operators that the data is of the desired quality.



Combined bathymetry and laser scan of waterfront area.



Offshore



Introduction

Offshore is the primary focus area in Teledyne Marine, and Teledyne RESON and BlueView offers a comprehensive product program for dedicated Multibeam Echosounders and sonars, supported by a global service organization to follow and support customers in this international industry.

Our forward looking imaging sonars from Teledyne BlueView provide an invaluable aid to ROV operators when navigating and maneuvering around Offshore subsea structures, and for pipeline surveying the SeaBat 7125 system is the favored choice for many survey companies, providing unrivalled performance.

On the forefront of technology are innovative market leading features such as target detection systems for station keeping of ROV's and automatic tracking systems to detect and follow pipelines. Technology that provide customer value by improving operational effectiveness, reducing cost and shortening the time from data collection to end-product.

Where the wide range of multibeam echosounders gather high-resolution terrain information of the seafloor, Teledyne's sub-bottom profilers look deeper. With the Parasound, sediment structures as slim as 15 cm can be visualized, buried objects can be localized prior offshore cable trenching or geologically stable pipeline routes identified.

Application areas:

Pipeline surveying

Metrology

Inspection & Monitoring

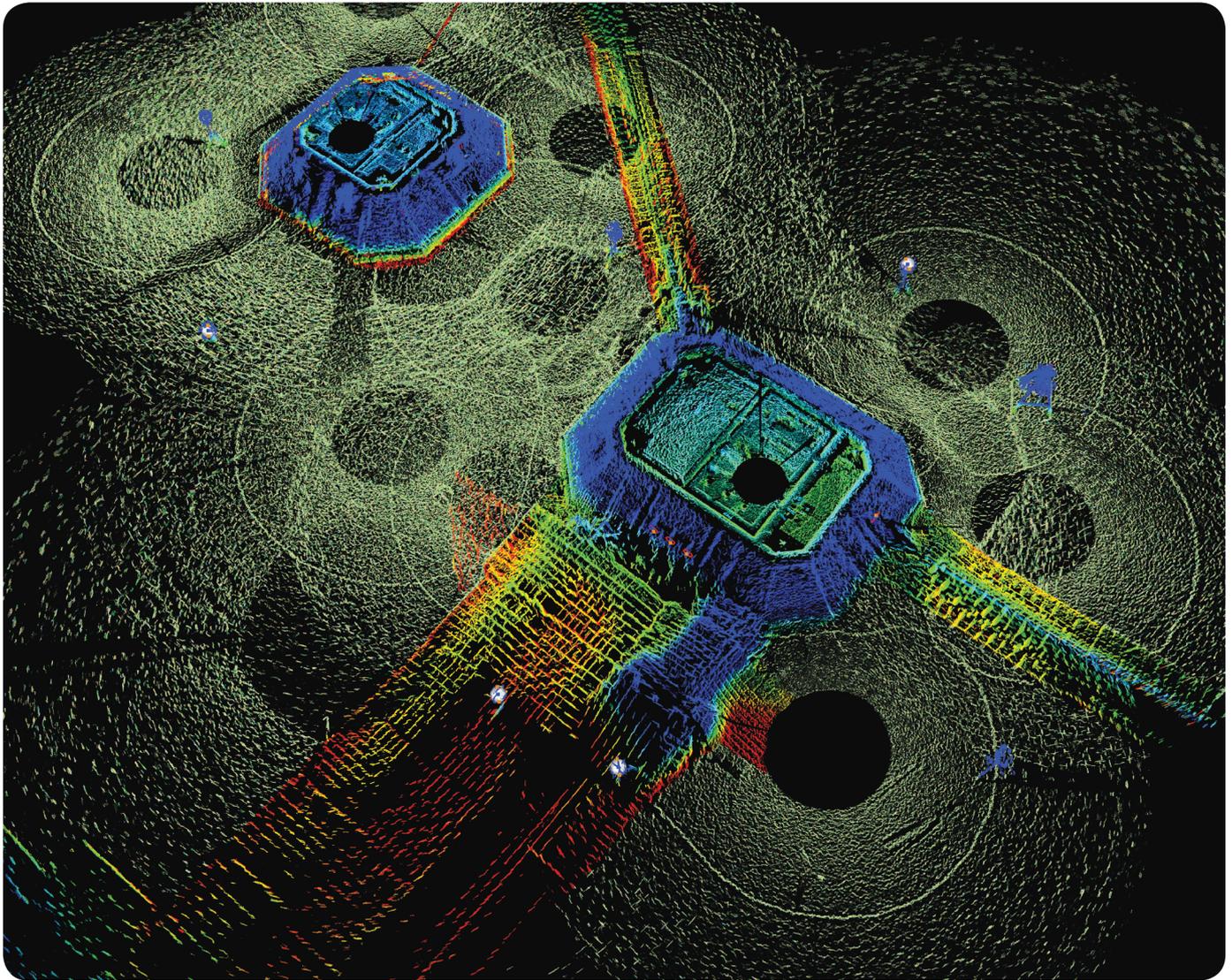
Obstacle Avoidance

Leakage Detection



Metrology

When in need of highly accurate measurements of underwater assets the BV5000 3D Mechanical Scanning Sonar produces the detailed information needed to design and manufacture spools. Along with providing highly accurate and valuable measurements the 3D point cloud of the areas scanned also can be used to monitor periodically for changes in the environment. Sediment shifts, builds up and scours away in areas around these structures and the BV5000 can track this movement with periodic inspections.



BlueView BV5000 survey of subsea jumper and spool piece metrology.



Inspection & Monitoring

Seabed and structural inspection tasks are effectively carried out using SeaBat sonars with extreme detail and long range/coverage.

For real time monitoring and inspections BlueView's high frequency 2D sonar are ideal providing video-like imagery.

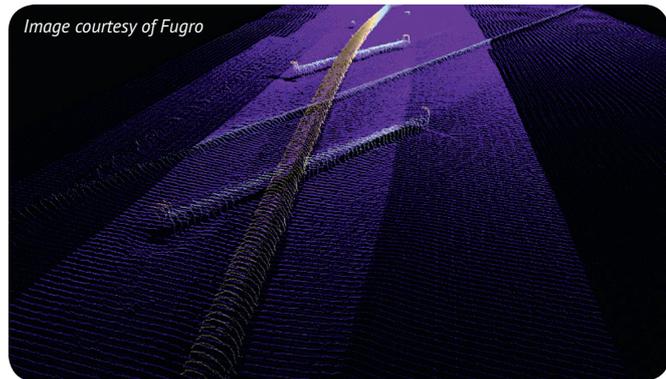
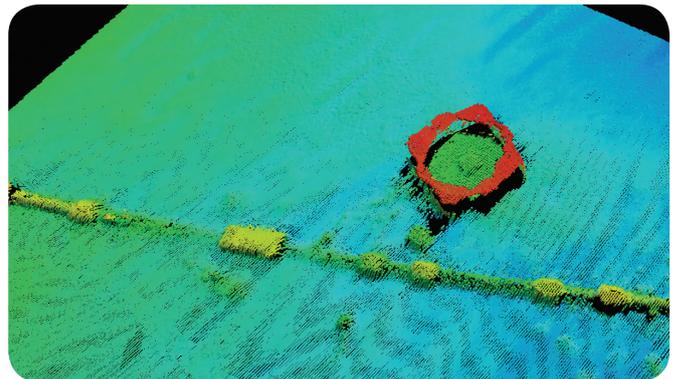


Image courtesy of Fugro
SeaBat 7125 - Pipeline detection from a survey vessel.

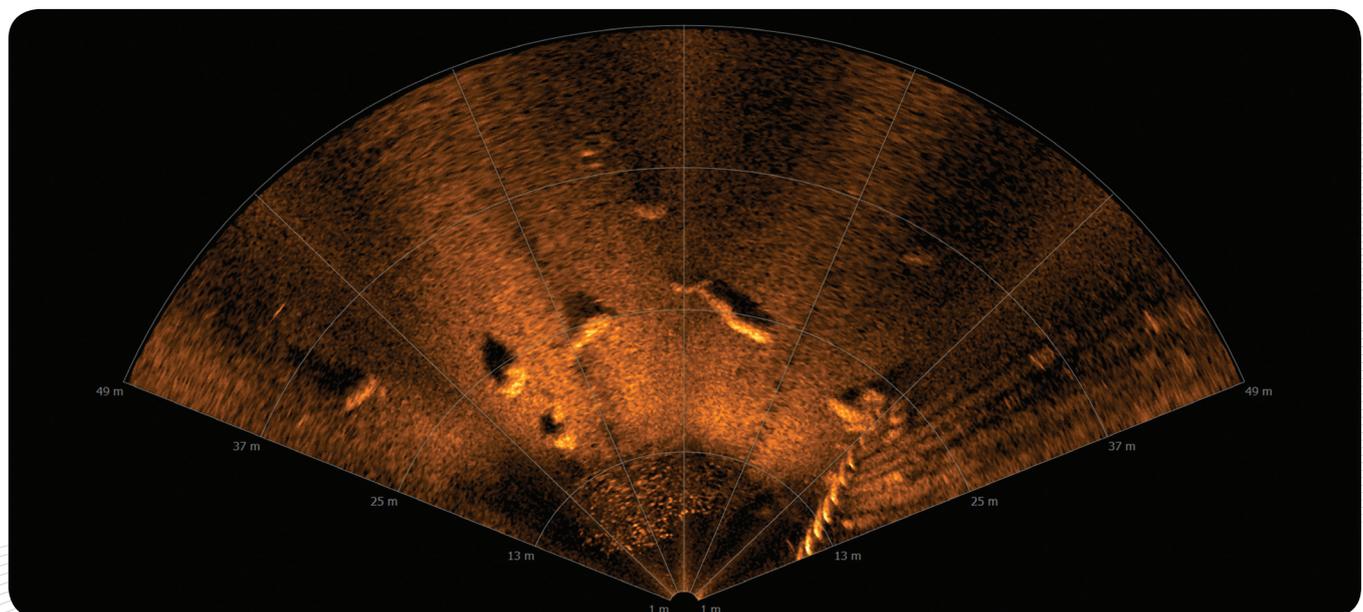


SeaBat T20-P – Offshore and renewables.

Obstacle avoidance

Teledyne BlueView's 2D Forward Looking Sonar are quickly becoming a standard on all underwater platforms for navigation, inspection and obstacle avoidance in all water clarity conditions. Providing video-like imagery, operators have the advantage of seeing their surroundings real time and increasing the operators situational awareness. An increased awareness of the surround-

ing area increases efficiency reduces down time and improves equipment safety. Furthermore, Teledyne BlueView's 2D FLS systems include target tracking software that can be incorporated into a vehicle's control system to provide or enhance holding position (station keeping) or safely move a vehicle to another position using the sonar image.

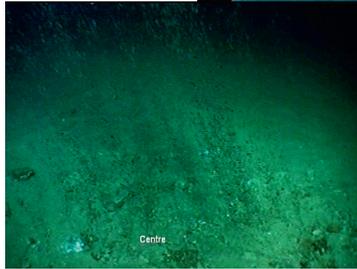
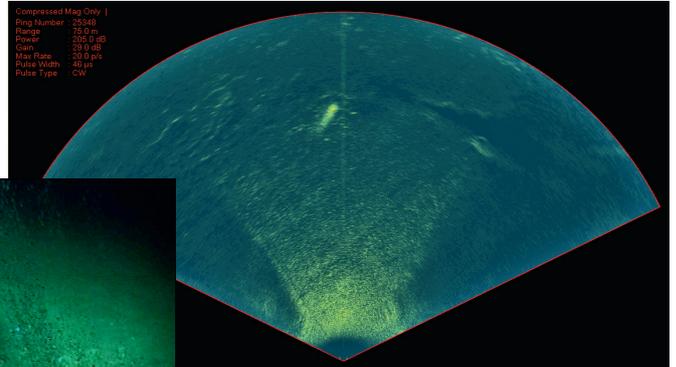


Teledyne BlueView 2D Imaging Sonar.

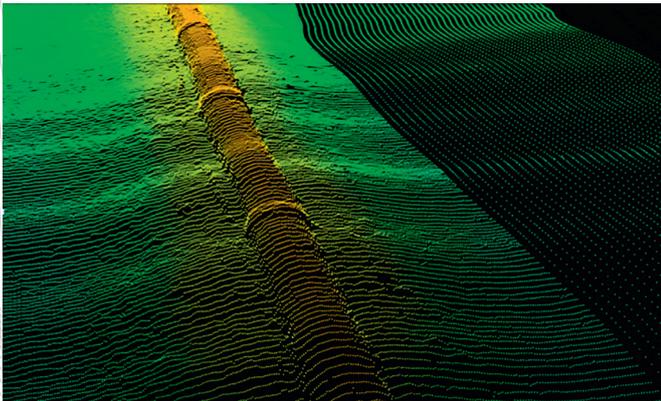


Leakage detection

Teledyne RESON has successfully demonstrated systems capable of detecting seeps and leakages, either generated by nature or unintended man-made leakages. Systems can be applied for either long term detection and documentation purpose or for periodic use during special events or critical operations.



Small gas seel detected with SeaBat 7128 forward looking sonar at 75m range.



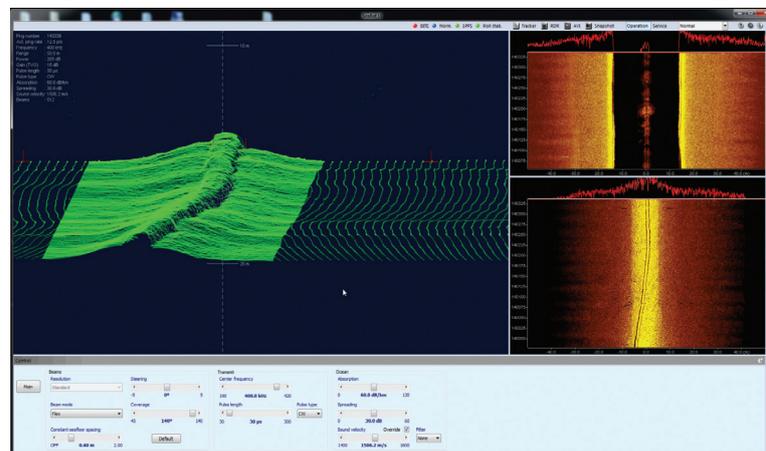
ROV over pipeline using Flexmode.

FlexMode

FlexMode is a special feature applicable to a range of SeaBat multibeam systems. FlexMode is optimized for pipeline and small object detection. An operator configurable centre sector is formed using very high density equi-angle beams and an underlying set of equi-angle beams provides coverage over the entire sector.

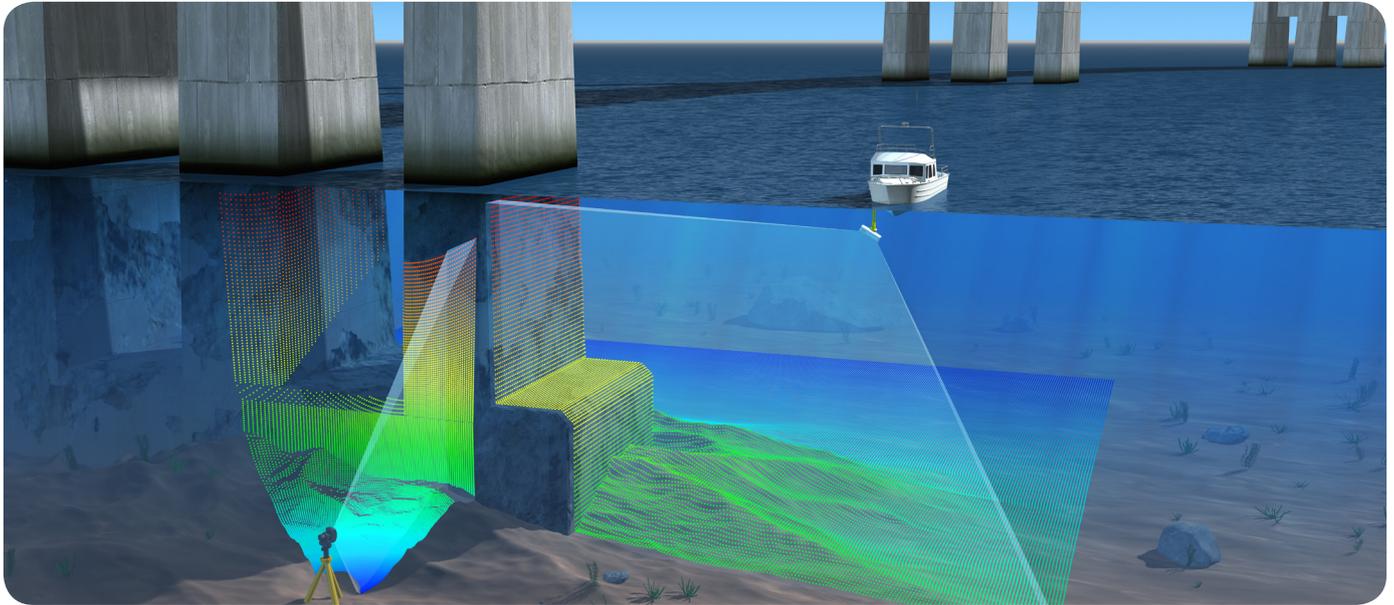
Pipe detection and Tracking

Building on the power of FlexMode, SeaBat now offers real-time pipe detection and tracking to minimize risks when assessing pipeline integrity. The unique feedback loop from pipe position to multibeam signal processing enhances pipeline profiling and detection performance. Coupled with our intelligent automated control systems, SeaBat can minimize processing times and make better use of resources and manpower.



SeaBat Real-Time Pipe Detection.

Civil Engineering & Dredging



Introduction

Teledyne Marine offers a comprehensive suite of solutions to support Civil Engineering & Dredge operations. Our product range includes hydrographic grade singlebeam echosounders, sub-bottom profiles and sound velocity profilers by Odom Hydrographic, 2D imaging sonars and 3D multibeam scanning sonars by BlueView and the SeaBat world leading range of multibeam echosounders all coupled with the power of Teledyne PDS software a leading software package for hydrographic surveying and dredge guidance operations.

With decades of experience we know that robust, easy to use equipment and accurate results are crucial to your success. Teledyne Marine is the only supplier with a full spread of acoustic and software solutions to meet the demands of the civil engineering and dredge market.

Application areas:

- Pre & Post Dredge Surveys
- Dredge Guidance
- Construction Support
- Bridge, Dam and Harbor Inspection
- Scour Monitoring



Railroad bridge footer inspection with DV5000 Mechanical Scanning Sonar reveals scour, debris and provides highly detailed imagery for bridge owners/inspectors.

Pre & Post Dredge Surveys

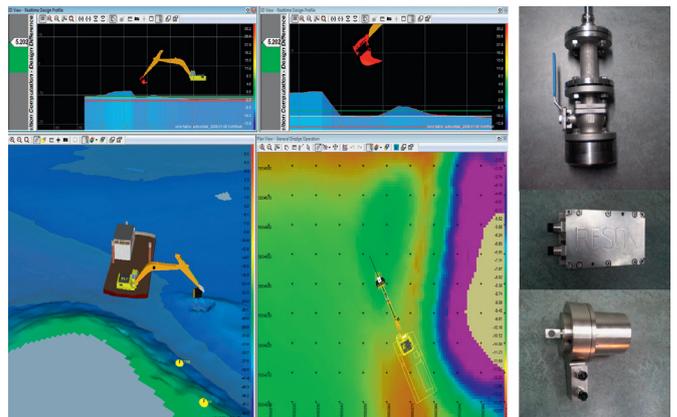
Accuracy is crucial for pre and post dredge surveys. Every centimeter counts as removal of even a fraction of a meter in depth can be a costly undertaking when done over a large area. Teledyne Odom provides accurate soundings with the unique patented bottom detection process for the most reliable results. Sounders are frequency agile and provide either paper or electronic readout. For a highly portable and robust multibeam echosounder select the Odom MB1 or MB2. For higher accuracy in a portable water resistance package take a look at the SeaBat T20-P. For those demanding nothing but the best look to the SeaBat 7125 for uncompromising accuracy and a powerful set of features.



Dredge application - Digital Terrain Model

Teledyne PDS Dredge Guidance

Dredge guidance solutions combining monitoring sensors and the Teledyne PDS software suite allow you to monitor the position and status of your dredging operation in real time. Combine the results of your pre dredge survey with online visualizations of your dredge while in progress allowing you to only dredge the areas you need to – saving you time and money. Teledyne PDS Dredge package supports a wide variety of dredging hardware including excavators, bucket, clamshell, cutters and hopper dredgers and more. Teledyne PDS is an a flexible package designed to expand around your needs so contact us if you have special requirements.



Teledyne PDS Dredge Guidance software and dredge monitoring hardware

Construction Support

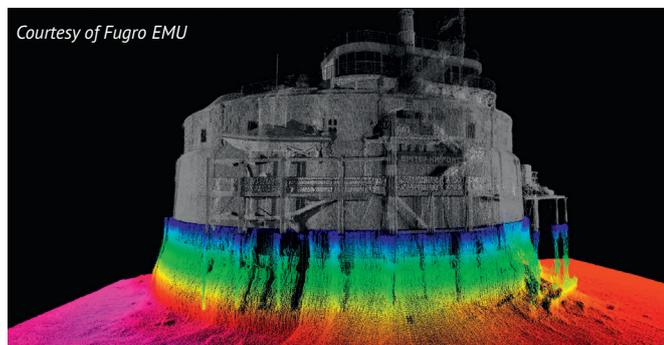
High resolution multibeam provide a unique ability to monitor and support subsea construction by allowing engineers to visualize progress in real time. BlueView 2D imaging sonar provide high resolution real time imaging and 3D multibeam scanning sonar provide high resolution 3D point clouds of areas and structures scanned for inspections throughout the construction project. RESON SeaBat multibeam support operations requiring longer range and where the most stringent hydrographic results are required, and also provide a powerful set of features.



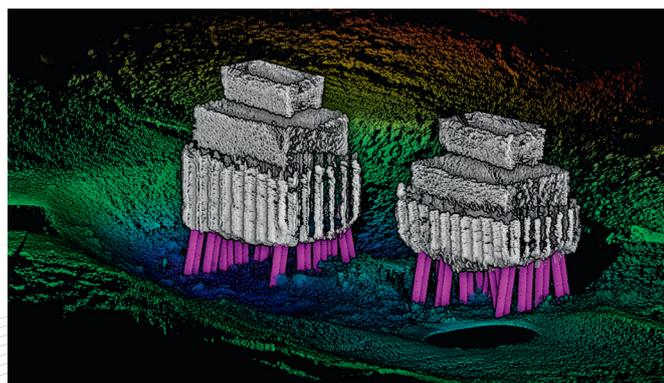
Bridge, Dam and Harbor Inspection

Monitoring of infrastructure below the water line is crucial to ensuring that it is well maintained. RESON's SeaBat 7125 and T20-P allow high resolution surveys of vertical structures by either mechanical tilt of the sonar, by simply steering the swath sector or a combination of both. Combined with the unique multi-detect feature to ensure you capture all the detail of structures during hydrographic surveys including determination of scour around the base of any supports.

The BV5000 3D multibeam scanning sonar is an ideal tool for imaging vertical structures such as bridges, dams, port and harbor walls. The multibeam sonar is mechanically scanned to generate high resolution 3D point clouds for engineers and inspectors to visualize, measure and assess a structure's condition. The light weight tripod allows the sonar to be deployed at a unique perspective for imaging undercut, scour and damage. Deploying the BV5000 in multiple overlapping locations increases coverage and different perspectives on objects of interest. Multiple locations are easily registered together using BlueView's Quick Stitch software.



Courtesy of Fugro EMU
SeaBat 7125 with Full Rate Dual Heads tilted outward combined with laser scanner.



BlueView scour monitoring data image.

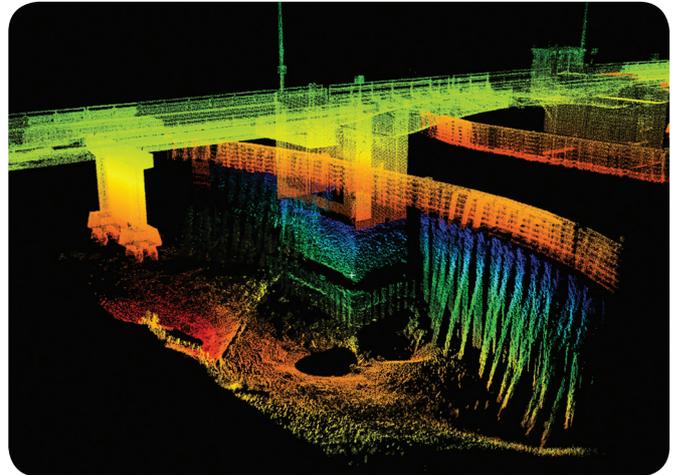


Image courtesy Arc Surveying & Mapping, Inc., Jacksonville, FL.

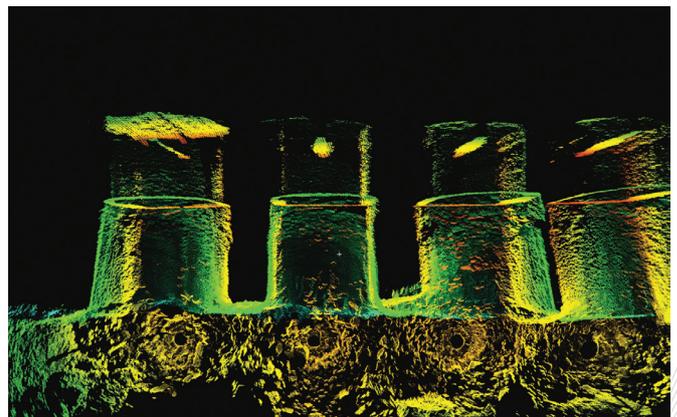


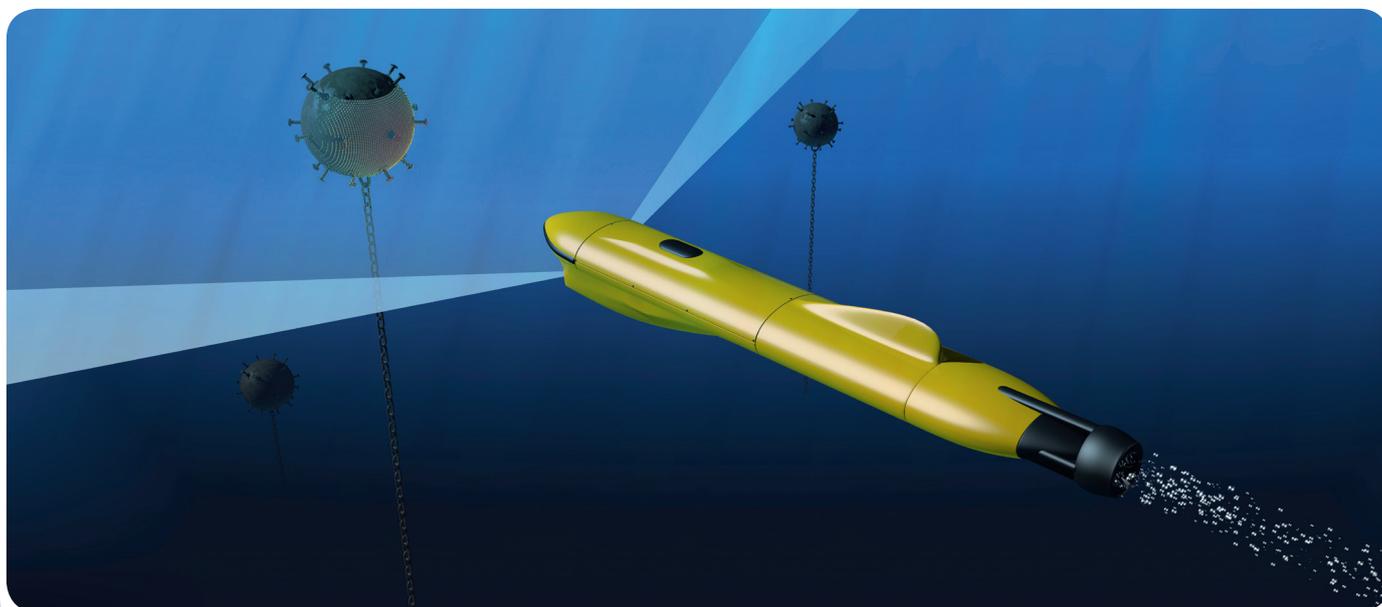
Image showing four dam draft tubes over 25m deep into the structure from outflow exit back into the control door. BlueView high resolution imagery can identify blocking debris and structural damage.

Scour Monitoring

Scour, caused by swift moving water can scoup out holes along and under bulkheads engineered to reinforce natural river banks, compromising the integrity of the structure.

Scour can also be present around offshore wind turbines and bridge supports, and can be hard to monitor with traditional means. BlueView sonars are ideally suited for monitoring scour in most water conditions.

Defence and Security



Introduction

Today more than ever nations rely on their naval capabilities to maintain their national interests at home and abroad. The demand for ever enhancing capabilities combined with tighter budgets is an ongoing challenge for most navies. Teledyne Marine is ready to support leveraging the widest range of sonar systems and hydrophones in the market, and able to customize capabilities when required.

Commercial-off-the-shelf products provide excellent performance for a fraction of the price of traditional military systems, and cost of ownership through lifetime is typically lower for commercial systems. Teledyne Marine is represented in the naval market by products from RESON and BlueView including multibeam echosounders for tactical bathymetric mapping, 2D forward looking sonars for a variety of applications and high quality hydrophones widely used by navies and institutes around the world.

Application areas:

- Terrain Mapping
- Obstacle Avoidance
- Mine Counter Measures
- Hydrophones
- Diver Detection
- First Responder Support



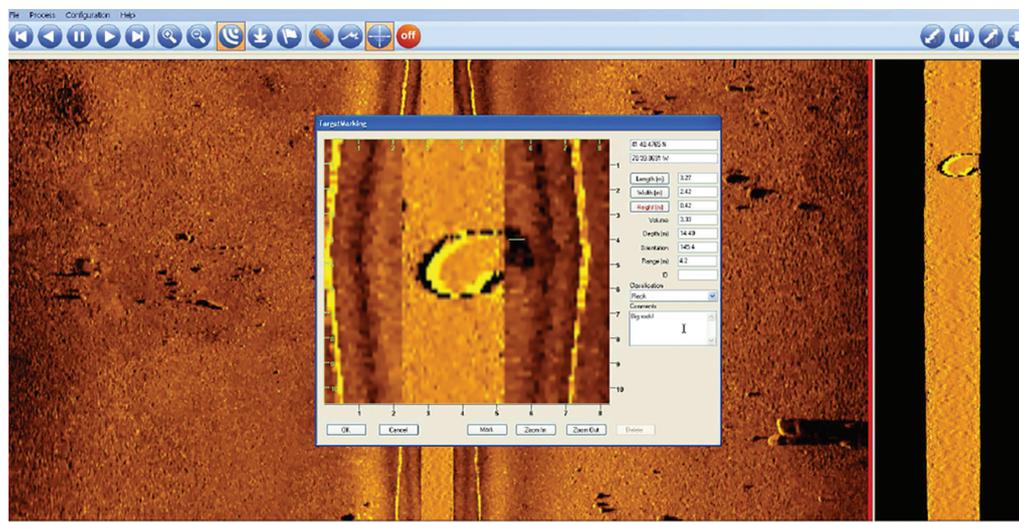
Image courtesy of ADUS UK

ADUS research image of submarine, SeaBat 7125.

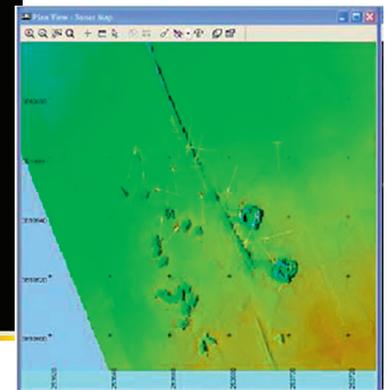
Terrain Mapping

Today underwater vehicles of various kinds are increasingly playing a role in underwater surveying, mapping and inspection, not least AUVs which are highly suitable platforms for tactical seafloor mapping and are more covert than traditional surface vessels. Teledyne Marine has a variety of products which support seafloor mapping from autonomous platforms.

The RESON SeaBat 7125 is a leading workhorse of the commercial survey market for AUV platforms. BlueView component AUV modules are currently deployed on most major AUV platforms, and are compact, lightweight, low-power and fully customizable and are therefore highly suitable for high resolution side scan “gap fill” for mapping applications.



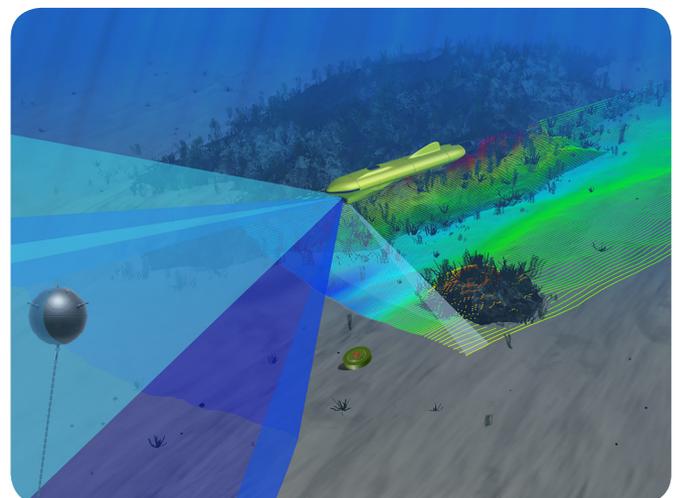
BlueView gap filler image.



SeaBat 7125 terrain mapping, visualisation of targets on the seabed

Obstacle Avoidance

Obstacles in the water column range from debris to moored mines and are a risk to survey assets and the personnel that operate them. Traditionally surface vessels rely on charts for safety of navigational, but for naval operations charts are often unavailable. Underwater vehicles must avoid objects in their path and are often fitted with single beam scanning sonars for this purpose, however these provide a slow update rate only covering part of the forward sector at any given instant. Teledyne Marine has the answer, from larger long range SeaBat systems which can operate on surface vessels or to 6,000m depth to the most compact low power BlueView 2D sonars (depth rate: 3,000m) we have a solution that will work for you. Contact us to see the benefits of true multibeam obstacle detection sonars and you'll never accept the limitations of a scanning forward looker again.



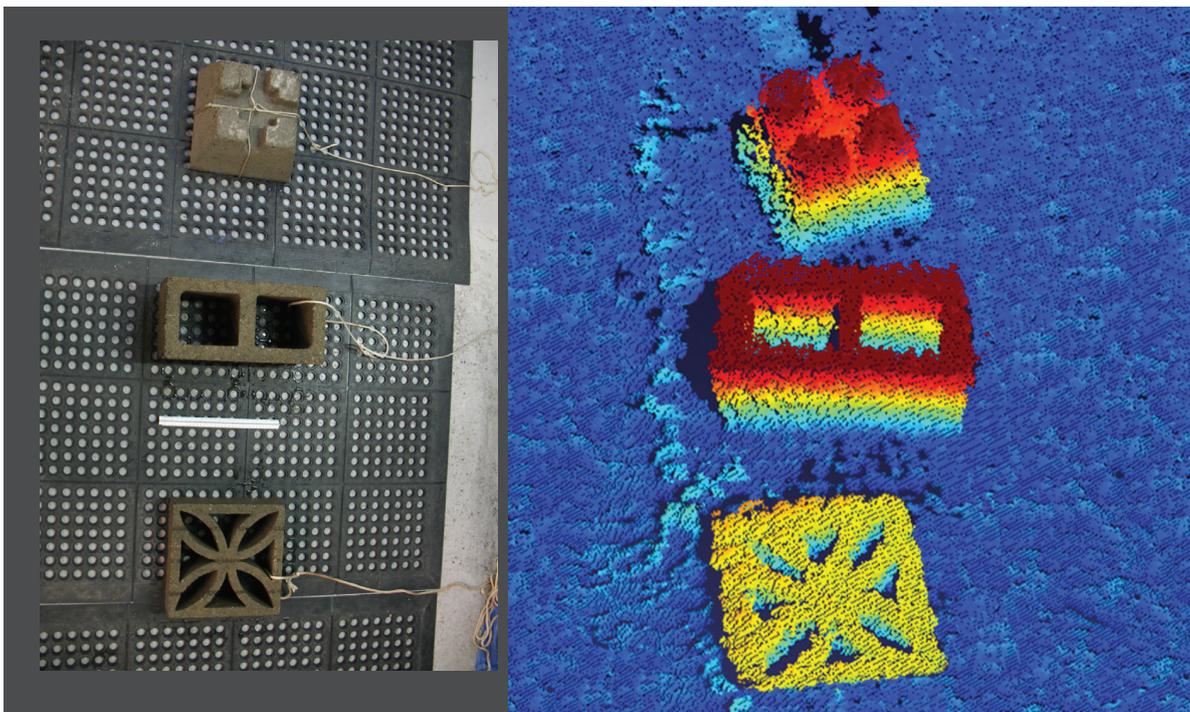
BlueView FLS, Micro-Bathymetry and Gapfill sonar on AUV

Mine Counter Measures

Sea mines remain one of the most cost effective means for navies to defend their territory, and will remain one of the greatest threats to the supremacy of the larger navies for the foreseeable future. Detection and localization of mines is a priority for mine clearance operations and for the operation of vessels within mined areas. The increasing use of ROVs and AUVs in MCM operations allow further stand-off of manned vessels from high risk areas thereby decreasing the risk to naval personnel. Teledyne Marine has a wide range of products supporting MCM operations

including the SeaBat 7128 with long range object detection capabilities and various BlueView products, with operating frequencies significantly higher than most other multibeam sonars, these products are able to capture a high level of detail at short ranges. Teledyne Marine is engaged in a variety of capability development programs with leading naval labs so don't hesitate to contact us to see how our solutions can support your requirements for future MCM operations.

BlueView MB2250 imaging cinder blocks at a distance of 1 meter.



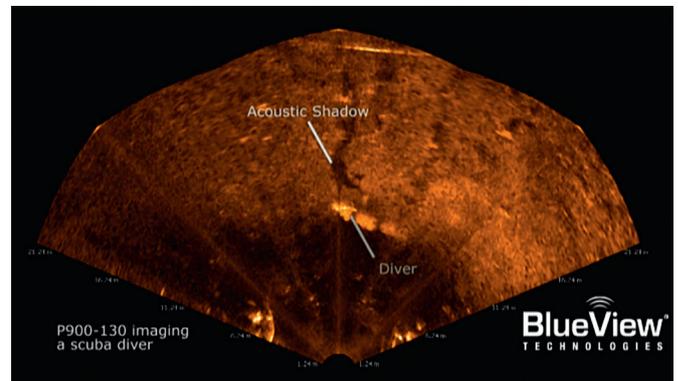
Hydrophones

Traditionally navies have relied heavily on passive acoustic systems for the covert monitoring of threats. Teledyne Marine is one of the largest suppliers of high quality hydrophones and transducers with RESON's hydrophone products being world renowned as calibration references used in many naval institutes and calibration facilities. RESON commercially available hydrophones cover a wide range of applications with products including high sensitivity

'sea state zero' hydrophones as well as wide bandwidth sensors for use up to 1MHz. Applications include submarine arrays, own noise measurement, mine explosion detection and more. With more than 35 years of experience in underwater sensor design, and a range of bespoke solutions delivered to a multitude of navies around the world, RESON is ready to support with unique capabilities.

Diver Detection and Tracking

Acting as acoustic underwater cameras with the ability to penetrate zero-visibility conditions Teledyne Marine forward looking sonar solutions are the ideal tools for detection of divers for the protection of critical infrastructure. Teledyne RESON offers systems such as the highly versatile SeaBat 7128 which is available in a variety of configurations and can detect objects up to 500m range and provides wide coverage, and various BlueView systems ranging in frequency from 2.25MHz to 450kHz and providing imagery from 1m to 300m away.



BlueView P900-130 imaging a diver showing diver, acoustic shadow and bubble trail

First Responder Support

The ability to locate and stabilize a drowning victim quickly can be the difference between life and death. Teledyne Marine has a variety of solutions to support first responders allowing them to improve the speed of victim recovery. Solutions include 2D multibeam imaging sonars such as the RESON SeaBat 7128 most

suitable for surface vessel mount and providing the most range; to the more compact lower weight BlueView multibeam sonars suitable for surface vessel use, but also for use on portable low logistics ROVs or diver handle hand units – a powerful tool to get the job done quickly.



VideoRay Pro 4 ROV with V Series Imaging Sonar, Sonar Integration skid, Manipulator Arm.

Customized solutions

Integrated Survey Sensor Systems IS³ Turn-key Projects

We offer a complete range of products and services to provide customers with a turn-key Hydrographic Survey Solution for new build vessels or vessel conversion projects.

Services include providing design engineering support to ship-yards with advice and guidelines for sonar system and ancillary sensor mounting as well as commissioning, planning, management and execution of projects in close cooperation with the customer's representatives.

Our proven IS³ approach ensures that our customers will benefit from a turn-key survey solution. This can also include an acoustic synchronization unit in order to avoid acoustical interference of different hydro-acoustic on-board sensors or data management software providing an overview of the data being collected by the scientific instrumentation.

The system responsibility is clearly addressed to us and our life-time project management ensures that our customers always know who to turn to whenever support is required.

These services are available worldwide and are provided in cooperation with our local service partners to provide the local support and logistics.

Apart from surface vessel based Hydrographic Solutions, we also offer integrated turn-key solutions for AUV, ROV, ROTV and Sea Bed Landers.

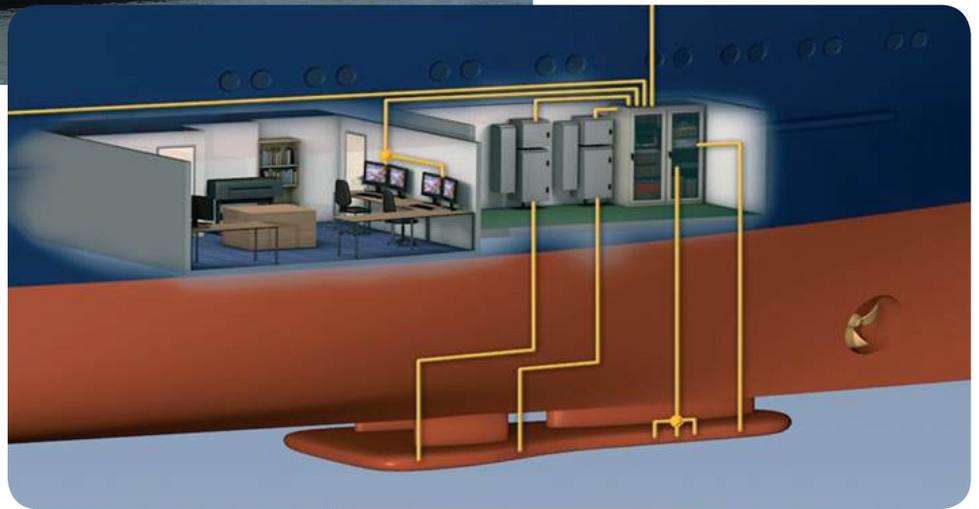
SeaBat 7150 gondola installation



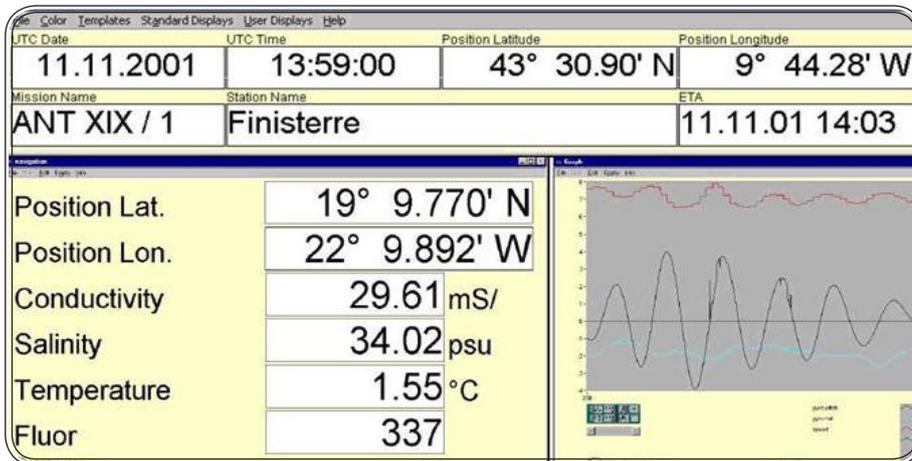
Research vessel Ocean Researcher 5, equipped with an IS³. Courtesy of TORI, Taiwan



General view of IS³ arrangement



DSHIP data management software providing full overview of all on-board scientific instrumentation



Customized Solutions for Military Applications

We provide customer specific solutions in the military market directly to the end user navies or as OEM components to system integrators. These solutions include hydrophone arrays utilizing COTS or modified COTS products, as well as integrated MCM sonar

solutions for surface vessel or PVDS applications. Surface vessel installation options include hoist mounted sonar systems for ice protection.

Customer Specified Sonar Systems or OEM Components



Hoist Installation

We have the capacity to design and manufacture customer specified acoustic components or complete sonar systems. We have a dedicated Project Management team available to provide seamless project execution to the customer's satisfaction. Project deliverables include a full range of services from specialized R&D involvement in the specification and design phase over in-house or out-sourced manufacturing to global after sales service and support.

Teledyne BlueView Customized Solutions

Teledyne BlueView has designed customized sonar solutions for defense, AUVs and large offshore operators worldwide. These operators continue to return to Teledyne BlueView for the reliability of low power consumption, high quality data and easy to use solutions. Our highly experienced R&D staff and engineering team have developed hundreds of engineered to order sonar systems currently in use in the field and continue to push the envelope on customized sonar capabilities. Teledyne BlueView also has worked directly with manufacturers to develop customized OEM sonar to specifically fit their platforms.



*BlueView V Series Imaging Sonar
developed for the VideoRay Pro 4 ROV*

Product Overview

Our multibeam echosounders and sonar solutions are typically configurable and often applicable to a wide range of deployment platforms and applications.

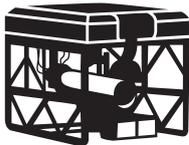
The selection guide below highlights products with enhanced utility for a variety of platforms and applications.

Surface mounted



Teledyne RESON: High resolution shallow water and deep water Multibeam Echosounders.
 Teledyne Odom Hydrographic: Compact shallow water Singlebeam and Multibeam Echosounders.
 Teledyne BlueView: Forward Looking Sonars
 Teledyne ATLAS Hydrographic: Deep water Multibeam Echosounders
 Mounted either on: vessel, pole, gondola, hull, sea-chest or hoist.

ROV



Teledyne RESON: Compact high resolution bathymetry
 Teledyne BlueView: 2D Forward Looking Sonars and 3D Mechanical Scanning Sonars
 Mounted directly on ROV or on pan and tilt unit.

AUV



> 12"

Teledyne RESON: high performance, compact, hydrographic bathymetry, Forward Looking Sonar.

Teledyne BlueView: low power consumption, extremely compact or Forward Looking Sonar, gap fill for sidescan and imagery.



9-12"

Teledyne BlueView: low power consumption, extremely compact or Forward Looking Sonar, gap fill for sidescan and imagery.



< 9"

Teledyne BlueView: low power consumption, extremely compact or Forward Looking Sonar, gap fill for sidescan and imagery.

Diver



Teledyne BlueView: Extremely compact and low power 2D Forward Looking Sonar

Tripod



Teledyne BlueView: 3D mechanical scanning sonar on tripod

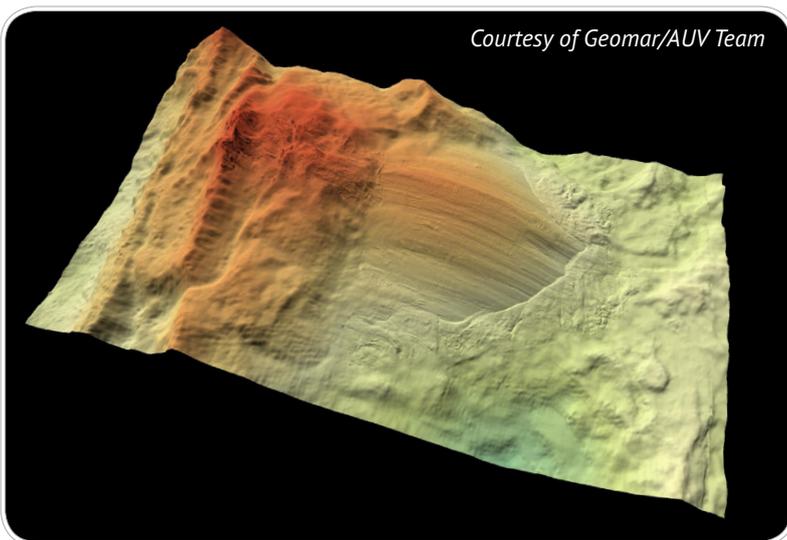
Multibeam Echosounders

The comprehensive range of Teledyne Marine multibeam echosounder products provides imaging and mapping capability from the highest resolution shallow water systems for small vessels,

AUVs and ROVs all the way to the full ocean systems for deep water mapping and scientific research.

System	Frequency	Beam widths	Typical depth	Max depth
MB1	170 - 220kHz	4°x 3°	0.5 - 100m	240m
MB2	200 - 460kHz	1.8°x 1.8°	0.5 - 100m	240m
SeaBat T20-P	190 - 420kHz	1°x 1°	0.5 - 375m	575m
SeaBat T50-P	190 - 420kHz	0.5°x 1°	0.5 - 375m	575m
SeaBat 7125	200/400kHz	0.5°x 1°	0.5 - 400m	500m
SeaBat 7111	100kHz	1.9°x 1.5°	1 - 900m	1000m
SeaBat 7160	41-47kHz	2.0°x 1.5°	3 - 2750m	3000m
SeaBat 7150	12-24kHz*	0.5°-4°*	50 - 6000m*	6000m*
HydroSweep MD50	52-62 kHz	0.5°, 0.75°, 1°, 1.5°	5 - 2000m	2500m
HydroSweep MD30	24-30 kHz	1°, 1.5°, 3°	10 - 6000m	7000m
HydroSweep DS	14-16 kHz	0.5°, 1°, 2°	10 - 11000m	11000m
Parasound MD, P35, P70	0.5-6 kHz	4.5°x 5.0°	10 - 11000m	11000m

* For relevant tolerances for dimensions above and detailed outlined drawings see Product Description. For actual swath performance refer to Product Description. Specified range may include optional features such as X-Range. Multibeam performance is array configuration dependant.



Oblique view of the 13°20'N oceanic detachment along the Mid-Atlantic Ridge, showing the high-resolution AUV bathymetry recorded by Seabat 7125 draped over echosounding/Bathymetric Measurements from a ship.

With the most comprehensive range of multibeam echosounders in the market Teledyne Marine is a total solution provide to the market. Products range from highly compact shallow water multibeam systems to configurable solutions for deep water survey.

MB-1



Entry level multibeam echosounder system

Designed to meet the needs of hydrographic professionals that are looking for a low cost yet high performance swath sounder. Capable of sounding a swath of 512 beams and up to 120 degrees in over 120m depth of water, and up to 240m at nadir. Optional integrated motion sensor and GPS heading system simplify installation and calibration making MB1 perfect for use on vessels of opportunity, small survey launches, and ASVs.



MB-2



Fully integrated Multibeam Echosounder for fast mobilization on smaller vessels

Developed for fast mobilization on smaller vessels and is optimized for shallow water survey companies, Port and Harbour Authorities, dredging companies and other users looking for an easy to use, quick to deploy, high resolution system. The MB2 is capable of sounding a swath of up to 140° in up to 110m water depth. Optional integrated IMU and GPS heading system as well as an integrated real-time SVP sensor to simplify installation and calibration.



SeaBat T20-P



Where performance meets portability

The ultimate combination of portability and performance. With the SeaBat Portable Sonar Processor mobilization time is reduced to help you focus on getting the job done. Fully adaptable to a wide range of applications the T20-P uses compact low-weight transducers in a 1°x1° configuration. The Portable Sonar Processor is water resistant and is capable of time tagging typical support sensors.



SeaBat T50-P



Ultra high resolution portable multibeam echosounder

Teledyne's new flagship ultra-high resolution multibeam echosounder in the shallow water product range. The SeaBat T-series is based on a new scalable receiver platform with an extremely low level self-noise, providing the user with unprecedented clean data, and reducing the data processing time and supplying faster than ever survey deliverables.



SeaBat 7125



The multi-purpose multibeam echosounder system

It has continued to evolve with ever more powerful features for specific applications, and for enhancing productivity. The fundamental acoustics continue to be class leading with 400kHz for high resolution, high density surveying which exceeds the most stringent of specifications, and 200kHz for greater range performance. The SeaBat 7125 can be installed on any platform from surface vessels to ROVs and AUVs down to 6000m water depth.



SeaBat 7111



Mid-water portable multibeam echosounder system

A high performance medium water system with powerful features such as pitch stabilization that supports the generation of high resolution hydrographic charts exceeding standards in international deep waters.



SeaBat 7160



An unbeatable combination of range, resolution and portability

High-resolution medium depth sonar which is easily installed for portable or hull mounts. Operational depths 10m to 3000m. Performance enhancements over the SeaBat 8160 include the addition of 512 high density equi-distant beams, variable swath coverage, beam uncertainty measurement, water column data and many other efficiency enhancing features.



SeaBat 7150



The ultimate deep water multibeam echosounder system

The ultimate in flexibility combining high resolution performance with an advanced modular design. Select 24kHz for ultra-high resolution in shallower water and switch to 12kHz for more range in deeper waters. Modular design allows customers to tailor the system configuration to their resolution requirements and budget.



HYDROSWEEP MD50/D30/DS



The high-end deep water multibeam echosounder systems

The HydroSweep product family consists of three different product variants: The MD/50, which uses a centre frequency of 50 kHz for water depths up to 2,500 m, the MD/30 at 30 kHz for 7,000 m and the DS, which uses 15.5 kHz for full ocean depth. Modular design allows customers to tailor the system configuration to their resolution requirements and budgets.



2D Forward looking Sonars

Together we have a wide range of forward looking sonars systems from the highly compact and low power BlueView M-Series to the high resolution long range SeaBat 7128 sonar,

we have all your needs covered with the most extensive 2D product range in the marketplace. Configurations available include systems for use on surface vessels, ROVs and AUVs.

System	Frequency (kHz)	Coverage	Beam Width		Beams	Beam Spacing	Range (Typical)	Range Max. (Up to)
			(Horz. Rx x Vert. Tx)					
SeaBat 7128	200/400kHz	128°	0.5° x 25°		256	0.5°	350m	500m
M900	900kHz	45°,90°,130°	1° x 20°		256,512,768	0.18°	60m	100m
M-450	450 kHz	90°,130°	1° x 20°		512,768	0.18°	150m	300m
M900 - 2250	900kHz-2250 kHz	90°, 130°	1° x 20°		512, 768	0.18°	(900) 60m, (2250) 15m	(900) 100m, (2250) 20m

* All specifications approx. and may vary by configuration, for detailed specification refer to relevant product literature.

SeaBat 7128



Dual-use general purpose forward looking sonar

Suitable for a variety of tasks from offshore inspection to mine countermeasure. Configurations suitable for surface vessels, AUVs and ROVs.

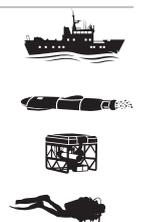


M-900



High resolution 2D Forward Looking Sonar

The M900 is a general use sonar for navigation, inspection and obstacle avoidance for surface vessels, ROVs and AUVs. This very compact sonar can be moved from a surface vessel for large area searches to an ROV for target identification and closer inspections.



M-450



Long range navigation, inspection and obstacle avoidance

The M450 long range sonar is designed to provide operators with large area coverage from a surface vessel to underwater vehicles.

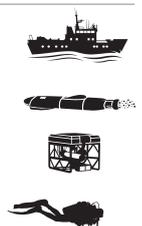


M900 - 2250



Dual Frequency 900kHz and 2250kHz 2D Forward Looking Sonar

Combining the power of navigation and inspection sonar in one package creates the most versatile imaging sonar available. Combining these into one sonar solution still makes a compact and low power sonar for easy modularity transfer from one platform to another.



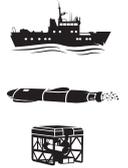
3D Forward Looking Sonar

SeaBat 7130



3D Forward Looking Sonar

The SeaBat 7130 is a 200kHz / 635kHz High-Resolution Forward Looking Sonar System. 635kHz provides high-resolution classification functionality, whereas the lower frequency provides long range 2-D detection and 3-D output modes. The SeaBat 7130 is an ideal sonar platform for development of advanced forward-looking sonar applications that include obstacle avoidance, terrain mapping, Concurrent Mapping and Localization (CML), object classification, and more. The bathymetry mode produces raw Vernier results which must be further processed to derive a final bathymetry product.



3D Mechanical Scanning Sonars

BlueView 3D multibeam scanning systems are highly portable instruments that create high resolution 3D imagery and capture

accurate measurement data of underwater structures, objects and sites.

BV5000 - 1350



Designed for imaging of complex underwater structures

BV5000-1350 The perfect balance between range and resolution, specially designed for imaging of complex underwater structures with a high operating frequency of 1.35mHz providing a range of 1-30m (3.3-98ft).



BV5000 - 2250



Engineered for ultra-high 3D resolution

BV5000-2250 Engineered for ultra-high 3D resolution, the BV5000-2250 delivers unprecedented imagery and detail at close range. The 2.25mHz operating frequency enables ultra-high resolution 3D scans with ranges of 0.5-10m (1.6-33ft).

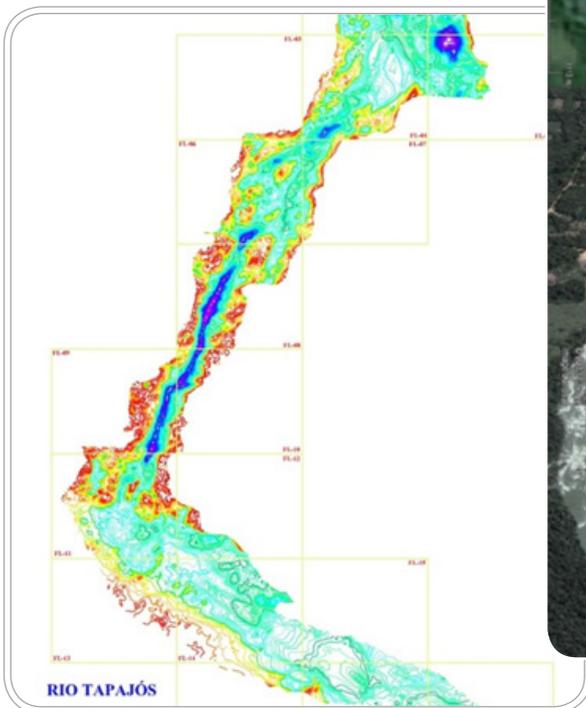


Singlebeam Hydrographic Echosounders

Odom Hydrographic provides an extensive range of hydrographic level single beam echosounders with the flexibility of frequency agility supporting existing transducer installations. Models include modern PC screen based interfaces as well as support for

tried and tested thermal record printing. Maximum depth range varies based on a number of factors including maximum transmit power, water conditions and vessel installation but as a general rule the following applies:

Frequency (kHz)	200	33	24	15	12	200	200	340
Depth of water (recommended)								
100m	●	●	●	●	●	●	●	●
200m	●	●	●	●	●	●	●	
500m		●	●	●	●	●	●	
1.000m		●	●	●	●	●	●	
1.500m		●	●	●	●			
4.000m+				●	●			

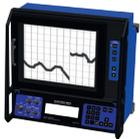


Courtesy of Rural Tech Topography

Google Earth image of survey area and bathymetry gathered using the Teledyne Odom CVM Singlebeam Echosounder at the Tapajós River in Brazil.

Singlebeam Hydrographic Echosounders

Echotrac MKIII



Dual Frequency Echo Sounder

The Echotrac MKIII is the only sounder on the market offering you the choice of either a high resolution thermal paper recorder or a full-sized color LCD chart in an interchangeable module format. Both high and low channels feature frequency agility, enabling the operator to precisely match the transceiver to almost any existing transducer. This ability minimizes near-surface noise caused by transducer ringing while increasing echo return strength.



Hydrotrac II



Single Frequency Portable Hydrographic Echo Sounder

Specifically designed for work in less-than-ideal circumstances on small survey boats and inflatable watercraft, the Hydrotrac II offers compact portability and the confidence of knowing you're using a proven Odom product. It is completely waterproof with the front cover in place, and comes equipped with the same advanced features you've come to trust and depend on Odom echosounders.



CV100



Single or Dual Frequency Echo Sounder

Rugged, compact and splash-proof, the CV100 adds Ethernet functionality to an extremely flexible single or dual frequency echo sounder. Sharing technologies with the popular Echotrac CV200 echo sounders, the CV100 provides the user with the option of going to "all digital". With this model, the paper chart is eliminated in favor of data collection on the data acquisition PC. The CV100 is the sounder of choice when rugged reliability in a harsh environment is the chief requirement.



CV200/300



Hydrographic Echo Sounder

Odom delivers the perfect union of flexibility and technology viewed through a user-friendly networked Windows interface. Alongside the advance features and options that make the Echotrac MKIII such an outstanding product, the CV brings users to the next level by providing an optional third acoustic channel. Whether it's side-scan, bathymetric or shallow sub bottom investigation, the CV has the flexibility to handle the task.



CVM



Mobile Hydrographic System

The rugged and weatherproof Echotrac CVM outperforms all other echo sounders in its class by offering the utmost portability without sacrificing Odom performance standards. The CVM is offered with optional built-in DGPS and bundled notebook PC along with your choice of data acquisition software, the CVM has everything you need in an echosounder even when portability is not an issue.



Sub Bottom Profilers

Chirp III Sub Bottom Profiler



Teledyne Marine is a pioneer in Chirp technology and was the first to bring a commercial Chirp sub-bottom profiling system to the market. Teledyne Odom continues that advancement with the Chirp III sub-bottom profiling system. Portable and affordable, the Chirp III is a low cost system ideally suited for many applications. Its versatile system configuration provides the user with various styles of tow vehicles and hull mounted arrays.

- * 16 Bit resolution
- * Up to 15 Hz sounding rate
- * 200m maximum operating depth

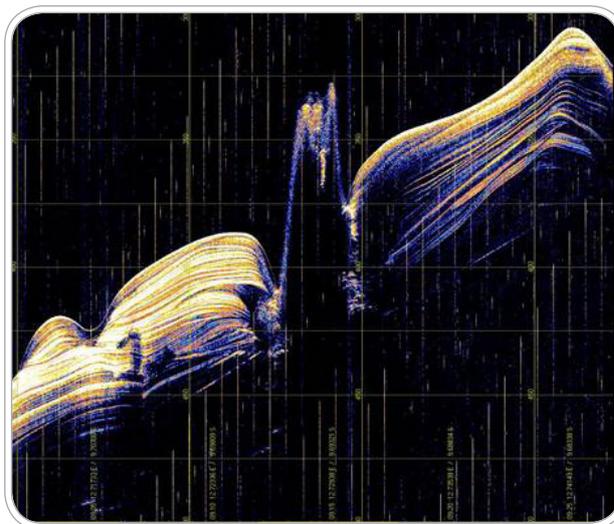


Parasound MD/P35/P70



Parasound is the most advanced hull mounted parametric sub-bottom profiler in the market. It utilizes the parametric effect to generate a low frequency secondary signal by emitting two primary signals of higher frequencies. In comparison with traditional towed systems the Parasound family offers very narrow transmission angle and greater positioning accuracy as well as higher operational speed and availability. Our sub-bottom profilers are suitable for operations to depths beyond the continental rise into the abyssal plains and down to the deep ocean trenches by making use of the following characteristics:

- * 11,000m depth range
- * Up to 200m penetration range
- * 4.5°x 5.0° beam resolution
- * Sediment layer resolution down to < 15cm



More than 50m penetration along a slope at approx. 400m water depth, interferences caused by Multibeam. Courtesy of University of Bremen, recorded onboard research vessel Meteor.

Transducers & Hydrophones

Utilizing generations of expertise in underwater acoustic transducer design we are able to offer transducers and hydrophones for use

with a wide range of hydrographic singlebeam echosounders and advanced OEM solutions.

Product Highlights

TC2003



Precision single beam hydrographic surveys, 190kHz to 210kHz with conical 3° +/- 0.2°.

TC2178



Dual frequency hydrodynamic transducer for hydrographic and navigational sounders with integrated pole mount point. 31kHz to 35kHz and 195kHz to 205kHz with conical beam 33kHz: 22° +/- 2° 200kHz: 9.5° +/- 1°.

Our hydrophones are precision instruments and the research institutes, companies and military organizations that we work with demand nothing less. From oceanographic research to monitoring of industrial processes, we have a range of hydrophones for reference measurement, reference projectors, passive arrays, positioning systems and tracking systems. Models provide a wide range of

sensitivities down to below sea state zero noise level, and wide bandwidths up to more than 1 MHz and cover depths to 2,000m. For ease of use select hydrophones with or without integrate pre-amplifiers and make use of additional amplifier and signal conditioning accessory products. Examples of products within the range include:

Model	Frequency	Receive Sensitivity*	Transmit Sensitivity*	Depth rating
TC4034	1 Hz to 470 kHz	-218dB	145dB	900 m
TC4032	5 Hz to 120 kHz	-164dB (differential)	N/A	600 m
TC4014	15 Hz to 480 kHz	-180dB (differential)	N/A	900 m

* Receive sensitivity dB re. 1v/uPa, Transmit sensitivity dB re. 1 uPa/V Q 1m

Find more products and model specific information on Teledyne RESON website.

TC4034



TC4032



TC4014



Sound Velocity Sensors

We have a comprehensive range of sound velocity sensors to compliment the single and multibeam products. Multibeam products require a continuous sound velocity to support beam steering and we have a number of products to offer for this purpose.

In addition to online sound velocity correction, accurate surveys require corrections for the sound velocity profile through the entire water column. This is applicable to both singlebeam and multibeam systems.

Model	Depth (max)	Type	Housing	Accuracy	Power (DC)	Interfaces
Digibar Pro	100m	Profiler	Stainless steel	± 0.3m/s	3 x C cell / DC cable	RS232
Digibar S	500m	Profiler	Stainless steel	± 0.05m/s	USB (rechargeable)	USB
Digibar V	50m	Online	Stainless steel	± 0.2m/s	USB	RS232
Sound Velocity Probe 71	2,000m	Online	Aluminium	±0.15m/s	8-60V	RS232
Sound Velocity Probe 70	6,000m	Online	Titanium	±0.05m/s	8-60V	RS232/485

Digibar Pro



- Battery operated hand terminal
- Up to 100 m cable (detachable)
- Stainless steel probe, splash-proof hand terminal
- Units in meters or feet
- Velocity profile or average sound velocity
- PC program available with graphing function and real time connection to probe

Sound Velocity Probe 70



- Long path length in compact design
- Robust all titanium housing and connector
- Flexible interfacing for long cables
- Plug & play with SeaBat SV processors

Digibar S



- Self contained profiles down to 500m
- Rechargeable battery via PC USB port
- Robust 316 stainless construction

Software Solutions

Teledyne PDS Software Suite - Collect, Process, Deliver

Teledyne PDS is a multipurpose software platform that supports a wide range of tasks within Hydrography, Dredge Guidance, Construction Support, Search & Recovery Operations and Port Entrance Monitoring.

Teledyne PDS is of-the-shelf software and developed to solve the challenges that arises from each specific task in the main business areas served by Teledyne Marine. Teledyne PDS interfaces with a wide range of sensors like Lidar, Multibeam and Singlebeam Echo-sounders, and is an optimal tool for interfacing to a variety of pe-riphery sensors like dredge and construction sensors, sound veloc-ity measurements, positioning, motion systems and most other devices that can output data.

The software is designed to be used in the maritime world with an intuitive user interface that is easy to learn. With Teledyne PDS you only need one software suite to collect, process and deliver data with in the same workflow.

You can use your Teledyne PDS files for data acquisition, editing, chart production and volume calculation without switching application – simplifying your analysis and saving desk time.

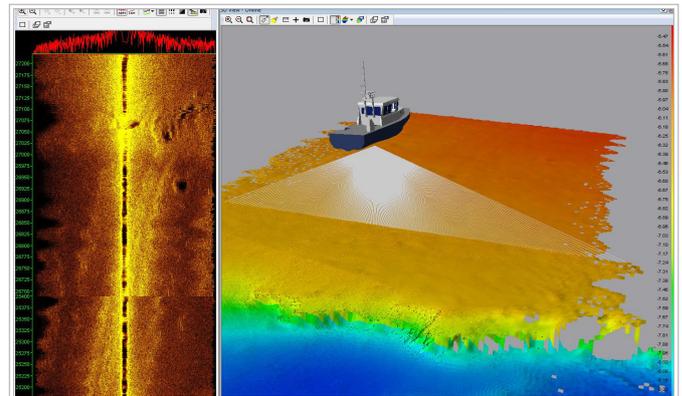


Teledyne PDS supports a wide range of takes within:

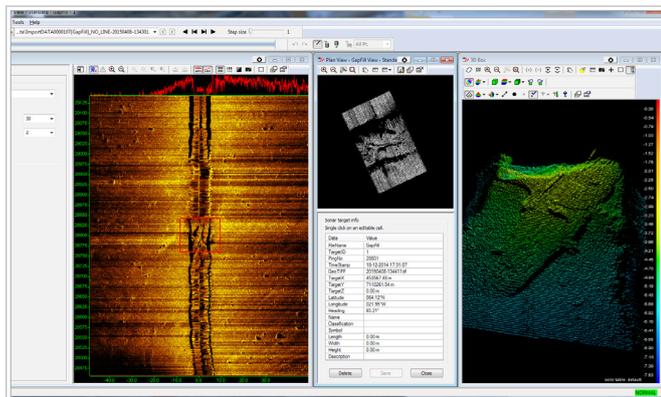
- Hydrography
- Dredge Guidance
- Construction Support
- Search & Recovery
- Operations and Port Entrance Monitoring

Teledyne PDS Software Suite - Open and scalable

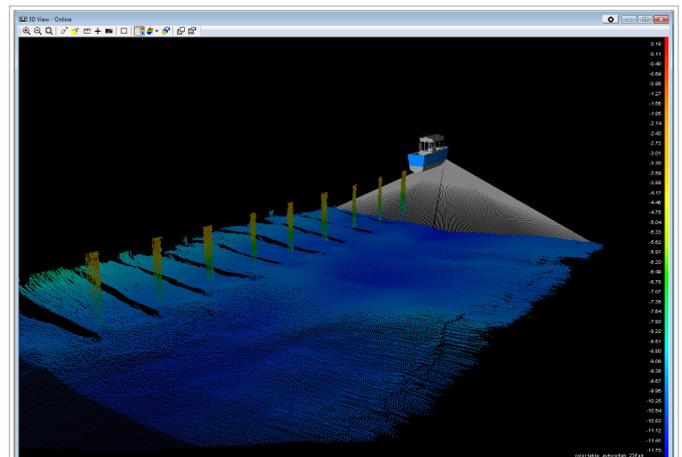
Teledyne PDS is an optimized solution for both Teledyne Marine products and almost all other available systems in the market from recognized manufacturers, and enables immediate data visualization and quality control, so you can view results as images or numerically in real time.



Norbit Multibeam Echosounder data



BlueView Gapfill Sonar data



Odom MB2 Multibeam Echosounder data

Vessel - Minotaur[Multibeam Survey]

Geometry Equipment Computations Data Sources

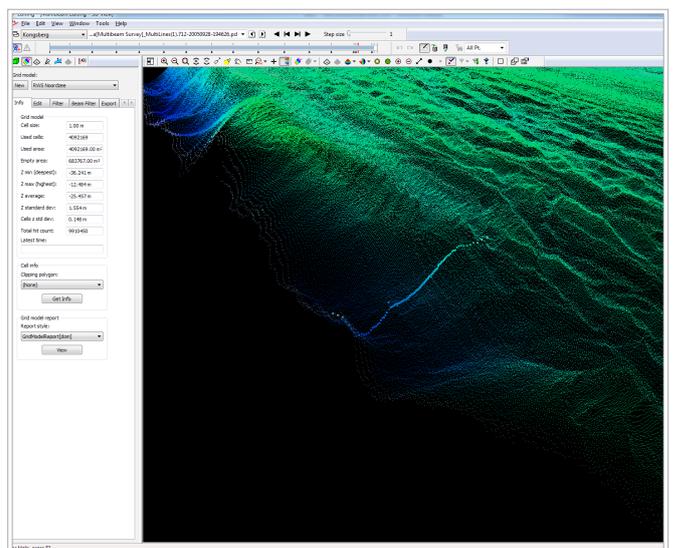
Groups:

- External clock
- Heave
- Interferometry
- Laser Scan
- Magnetometer
- Meteorologic
- Multibeam
- MultiBeam (All Options)
- Outfit

Device drivers:

- BlueView MotionSCAN
- BlueView pipe position r
- BlueView Profile
- Coda Echoscope(6)
- Elac-Hydrostar sb1000
- Imaginex 881
- Norbit using RESON 7k
- Odom ES3
- Odom TDY
- RESON SeaBat 7150
- RESON SeaBat 7k
- RESON-SeaBat
- RESON-SeaBat Pipe Position Monitor
- RESON-SeaBat Pipe Position Monitor J-Lay
- RESON-SeaBat Rotational
- Simrad-EM3000
- Simrad-EM3000-raw
- Simrad-EM3002-raw
- Simrad-EM950
- Simrad-multibeam datagrams - raw

Example of PDS drivers, supporting a wide variety of data collection systems



Kongsberg Multibeam Echosounder data

Teledyne PDS Dredge Guidance Solutions

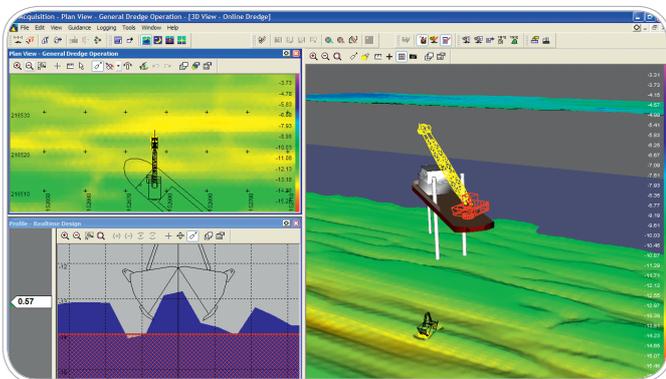
The application's strength is that the Teledyne PDS software combines a full range of sensors and software for dredge guidance and construction. Dredge systems supported are hydraulic excavators, wirecranes, bucket dredgers, underwater ploughs, trailing suction hopper dredgers and cutter suction dredgers.

Our client base includes large and small dredging companies, hydraulic engineering, construction, offshore and survey firms. With those in mind, all Teledyne RESON products are designed to withstand the harsh environments in which the equipment is used. Whether it's for revetment surveys, rock dumping, excavating, dredging, maintenance surveys, building breakwaters, windmill parks, barge management or any other construction projects, Teledyne RESON will supply you with a suitable solution.

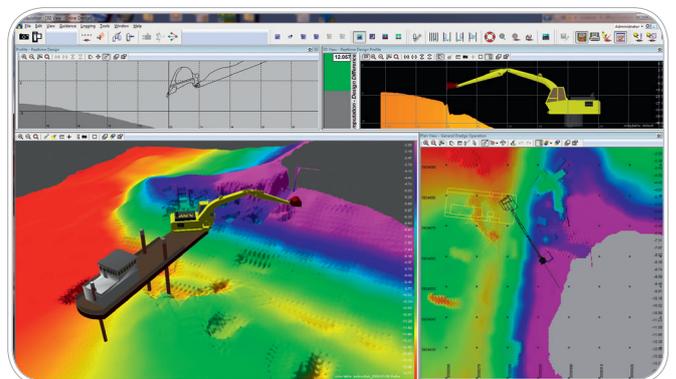
We supply a full range of sensors and software for dredge guidance and construction applications.

Dredge system supported are:

- Hydraulic excavators
- Wirecranes
- Bucket dredgers
- Underwater ploughs
- Trailing suction hopper dredgers
- Cutter suction dredgers



Wirecrane layout example



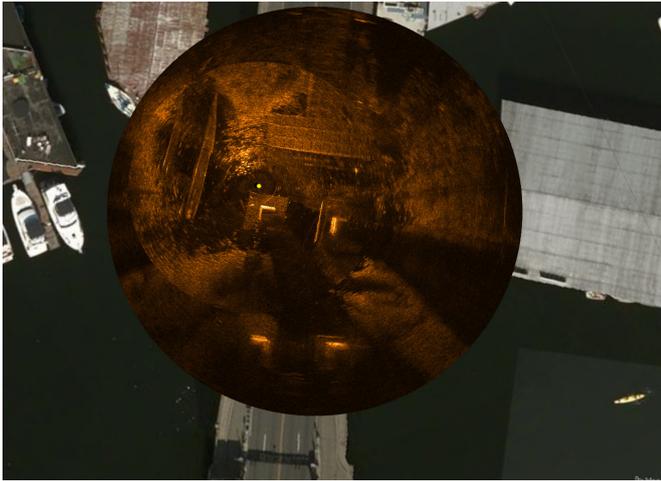
Excavator layout example



Teledyne RESON Excavator bucket sensor

PV360

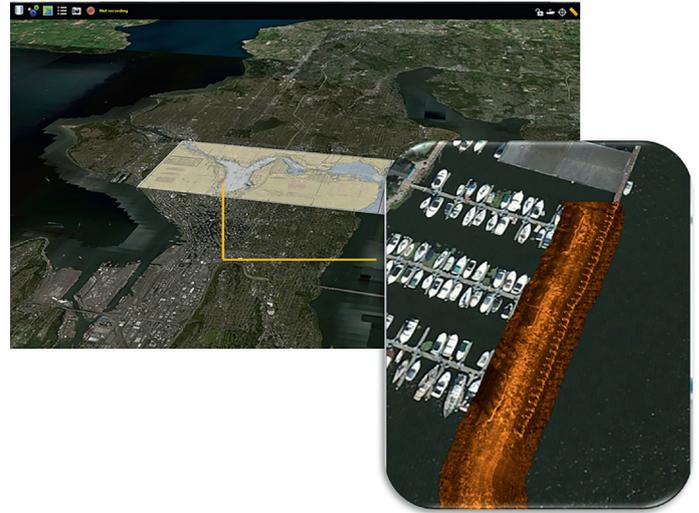
PV360 creates rotational images, or polar plot, from a P&T mounted sonar on a fixed platform. Averaging algorithms enhance the completed sonar image by canceling out random noise and strengthens multiple returns by improving signal to noise through stacking overlapping sections of the sonar imagery



ProMapper

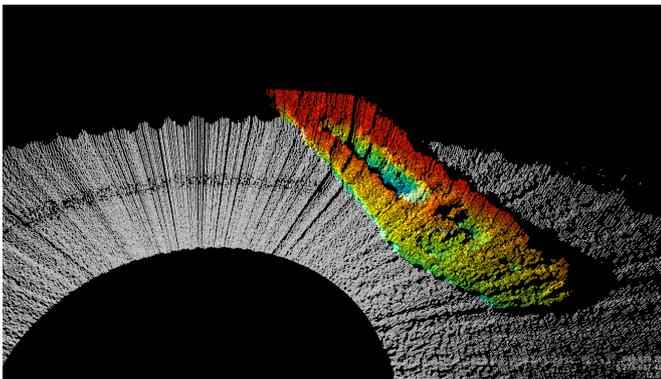
Geo-Mosaicking 2D FLS

ProMapper AppEx converts 2D forward-looking imaging sonar into a large area imaging tool by overlaying 2D sonar data on aerial images and/or nautical charts. This easy-to-use mapping software has an intuitive and user friendly GUI making ProMapper usable to the most novice operator.



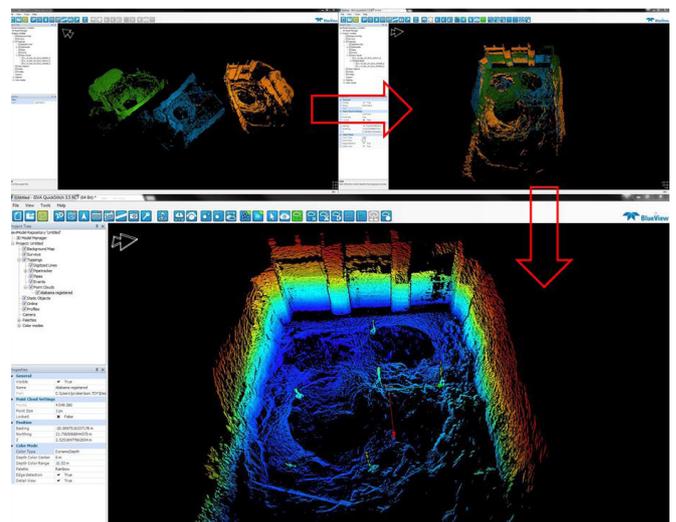
MotionScan

Teledyne Blueview's MotionScan system allows the 3D Scanning sonar user to collect motion compensated 3D point clouds from a moving platform. The MotionScan system is comprised of: an RTK capable dual antenna GPS with precision heading output, a MiniSense3 heave, pitch and roll sensor, a topside control console and PDS data acquisition software. Some advanced users may already have adequate positioning and heading sensors required for compensation calculations. These users may desire a custom integration MotionScan which provides only the Minisense3 motion sensor and the PDS acquisition software.



QuickStitch

QuickStitch software is designed to streamline the cleaning and alignment of multiple point clouds created by the BV5000 3D Multibeam Scanning Sonar with overlapping data. After 3D point cloud data is collected in the field, the data needs to be processed into the final deliverable point cloud, a clean aligned mosaic of the areas scanned. QuickStitch gives operators the capability to quickly create a deliverable on the fly.



Engineering Services Solutions

Engineering Services

In Engineering Services we have more than 40 Engineers and Hydrographic Surveyors focused on providing close support to our customers wherever they are and whatever the circumstances. We operate out of six worldwide locations and we have extended our closeness to our customers with a global network of service partners.



Maximizing your investment

From helping you install a standard shallow water sonar to constructing a tremendously advanced deep water tow body mounted system, we stand ready to ensure that you attain maximum gain from your investment in your sonar system.

Among our services you will find:

- Installation and commissioning
- Acceptance testing
- Customized solutions for all sonar usages
- Deep tow bodies, gondolas, mounts, sea chests and more
- Comprehensive training program
- Hydrographic survey support
- Health checks and system refurbishments
- Dimensional surveys

Service level Agreements

The Service Level Agreements are aimed at any Seabat owner looking to extend the lifetime of his investment and reduce both planned and accidental down time. Preventive maintenance assures you that your sonar has been checked by an expert engineer and is ready for the next surveying season.

If you require support during a survey, the Service Level Agreement grants you 24/7/365 access to Teledyne Marine support hotline. If your equipment must come in for servicing, it has priority handling with a guaranteed short turnaround time. With a backup supplement, we will ship a loan component within a day to get you back to your survey.



Software and firmware maintenance releases	Availability of the latest maintenance releases of your sonar's software and firmware. May be installed during preventive maintenance, repair or provided electronically.
24/7/365 Hotline and Helpdesk	Access to service engineers, field engineers and hydrographic surveyors for support or incident handling within guaranteed response time.
On-site field support	Access to on-site incident support with a guaranteed maximum response time. Delivered by our service engineers, field engineers and hydrographic surveyors.
Priority repair handling	Fast track handling of repairs, upgrades, preventive maintenance in our service centres.
Preventive maintenance	Lifetime services consisting of on-site integrated health checks, service centre health checks and system refurbishment.
Warranty period extension	Extension in time of standard factory warranty.
Backup components	Guaranteed availability of backup components to replace own equipment in case of planned or unplanned downtime.



TELEDYNE MARINE
Everywhereyoulook™

BlueView • Odom Hydrographic
RESON • ATLAS Hydrographic

www.blueview.com

www.odomhydrographic.com

www.teledyne-reson.com

www.teledyne-atlashydro.com