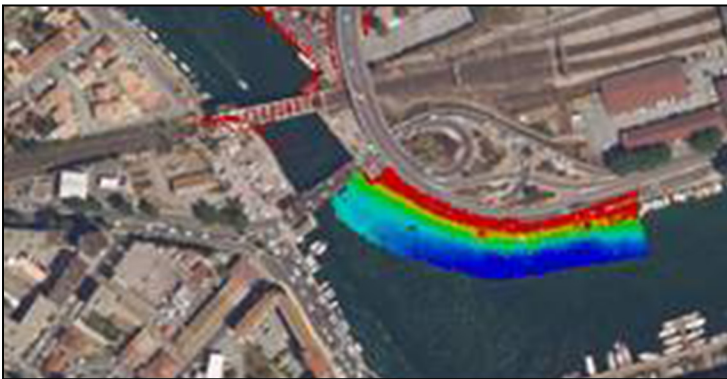


## ECO-LINE, France Improves Underwater Harbor & Structure Inspections

### The Situation

In the south of France a harbor quay reconstruction project required an accurate survey of the existing steel pilings and surrounding wreckage to accurately determine morphology. In addition to a high-resolution 2D imaging sonar inspection an accurate 3D rendering of the area was required to:

- 1) Measure the high corrosion anomalies on the steel pilings
- 2) Locate and measure submerged wreckage in the area that would impede navigation



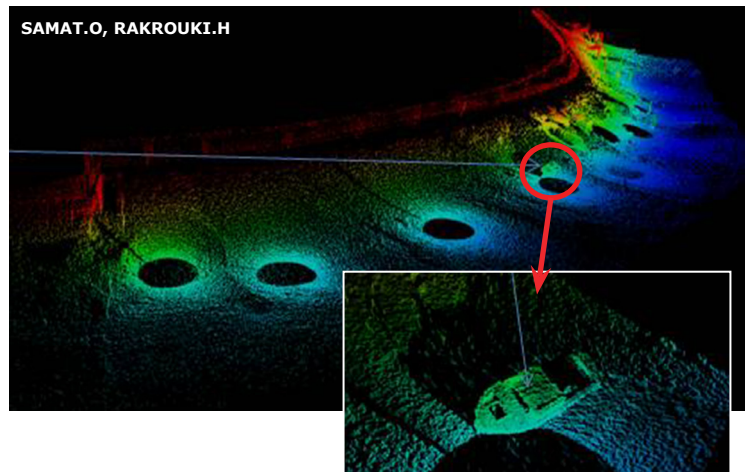
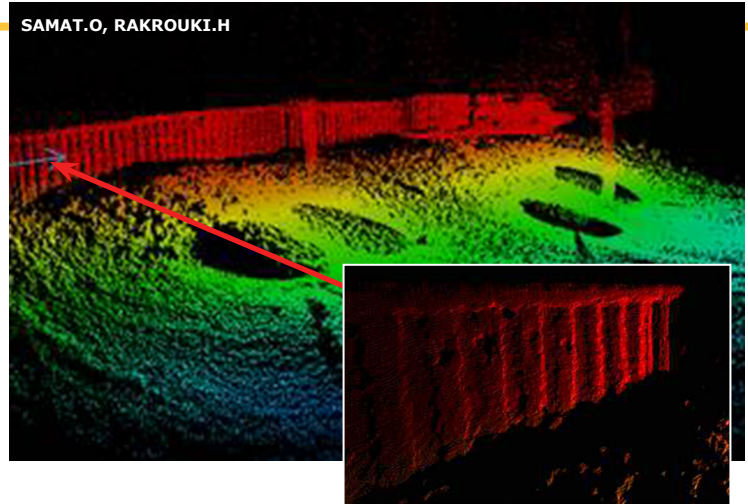
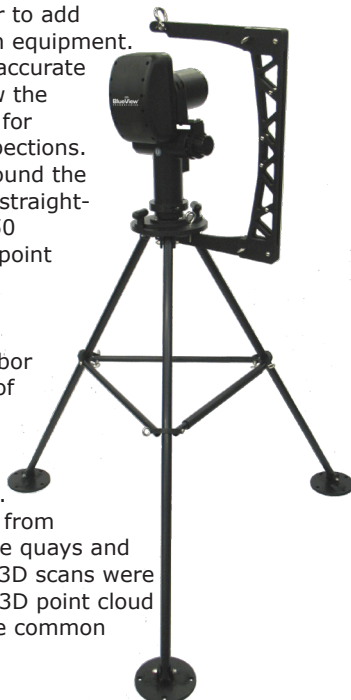
The aerial photo shows the harbor and highlights the quay reconstruction site.

Traditional underwater survey equipment was not well suited for the project since it could not provide the detailed side elevation data require for quay survey. Further, the relatively shallow water (2 – 7 meters) and numerous submerged obstacles made navigation along the quays difficult.

### The Solution

ECO-Line France, a leading distributor of underwater devices for professional and recreational uses recently purchased a BlueView BV5000-1350 3D Mechanical Scanner to add to their pool of underwater inspection equipment. Discovering the need for a portable, accurate underwater 3D system ECO-LINE saw the BV5000-1350 as the perfect solution for underwater structure and harbor inspections. ECO-LINE engineers and surveyors found the compact size, deployment ease, and straight-forward operation of the BV5000-1350 compelling, and the ground-vantage point offered the data collection from the unique perspective they sought.

ECO-LINE used the BV5000 for a harbor quay inspection project in the south of France deploying the scanner on a lightweight tripod along the entire length of the harbor quay from a small boat to a depth of 1 - 7 meters. Individual 360° 3D scans were taken from 15 locations to ensure coverage of the quays and the surrounding area. The individual 3D scans were merged into a single, fully rotational 3D point cloud using standard 3D rendering software common with terrestrial laser scanners.



### The Results

The 3D imagery above was captured with the BlueView BV5000. Olivier Samat, Geomatician, PhD in Geography of ECO-LINE stated "Because we needed to capture both the details of the harbor quays and the surrounding area we choose the BlueView BV5000, and placed the underwater 3D scanner in multiple locations to get an accurate 3D point cloud of the entire quay environment. The BV5000 gave us a very accurate 3D point cloud and we got all the measurements we needed (corrosion area size, wreck locations and sizes, silt build-up, etc.), to accurately describe the area's condition and morphology." Samat added "This process has been extended to other underwater structures, always with the same accurate results. The BV5000 is easy to deploy and an excellent piece of equipment to perform high resolution 3D surveys and structural inspections in confined place and hard-to-reach areas."

### Contacts

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## About the BlueView BV5000 3D Mechanical Scanner

BlueView uses new high-resolution profiling sonar technology to create an easy-to-use underwater 3D scanner, the BV5000 system. The compact, lightweight BV5000 works much like a topographic laser scanner, and uses high frequency sound beams instead of lasers to create extremely detailed 3D imagery and collect accurate measurement data. Designed for high portability and easy integration, the BV5000 system can be deployed on a tripod, ROV, or fixed mount. Operating from a stationary position, the BV5000 creates full 360° rotational scans. Multiple overlapping scans can be registered with or without navigation data to create mosaic images of large structures or areas.

All BV5000 3D Mechanical Scanning Systems include BlueView's ProScan® software and 3D viewer. The BV5000 data is stored in both raw format for post processing, and a standard .xyz point cloud format for easy import to multiple 3D viewing programs. BlueView is an authorized Leica Geosystems distributor, providing access to its powerful Cyclone software to create 3D mosaic imagery and model standard components for CAD export.



### BV5000-1350

The perfect balance between range and resolution. The BV5000-1350 is specifically designed for imaging complex underwater structures and areas with an operating frequency of 1.35 MHz that enables ranges of 1 – 30 m (3.2 – 98 ft.).

### BV5000-2250

Engineered for ultra-high 3D resolution, the BV5000-2250 delivers unprecedented imagery and detail at close range. The 2.25 MHz operating frequency enables ultra-high resolution 3D scans with ranges of 0.5 – 10 m (1.6 – 32 ft.).



### Typical 3D Mechanical Scanning Applications:

- 3D Site Survey
- 3D Structure Survey
- 3D Structure Inspection
- Structure Decommissioning
- Bridge Inspections
- Dam Inspections
- Seawall and Pier Inspections
- Condition Monitoring
- Scour and Erosion Monitoring
- Spool Piece Metrology
- Archeological Site/Structure Mapping
- Ship Hull Inspections and Mapping



The BlueView BV5000 can be integrated onto any work-class or mid-size inspection class ROV to enable easy 3D scanning of complex structures and areas, even in deepwater (up to 4,000 meters) environments. Combine the BV5000 with an ROV to collect 3D data from unique vantage points, providing unmatched visibility into and around the target structure or area.



The highly portable, lightweight BlueView BV5000 is easily lowered into position around complex structures, or in remote, hard-to-reach areas from waterside structures or small surface vessels. When combined with BlueView's lightweight tripod the BV5000 weighs approximately 40 lbs., and is perfectly suited for one-man deployment and operation.

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