Infrastructure inspection

with the high-frequency M3 Sonar® and Flexview

KONGSBERG

Underwater inspection of critical infrastructure is essential to understand structural integrity, identify defects, quantify degradation, and facilitate rehabilitation.

High-frequency sonar improves diver safety and efficiency by identifying hazards and problematic areas, guiding divers on where to focus their efforts, and revealing areas to avoid.

Imaging data gathered from the M3 Sonar HF and Flexview HF are high resolution, with cm-level feature detection capabilities that can be exported to a georeferenced image. Features can be detected in imagery data that are not apparent in traditional bathymetric data.

KEY BENEFITS

- Quickly inspect quay walls and other vertical structures
- Detect small details not possible with other sonars
- Reduce data processing time significantly while also improving image quality with SoundTiles mosaic software
- Eliminate the need for expensive GNSS with MRU or INS for vertical structure inspections

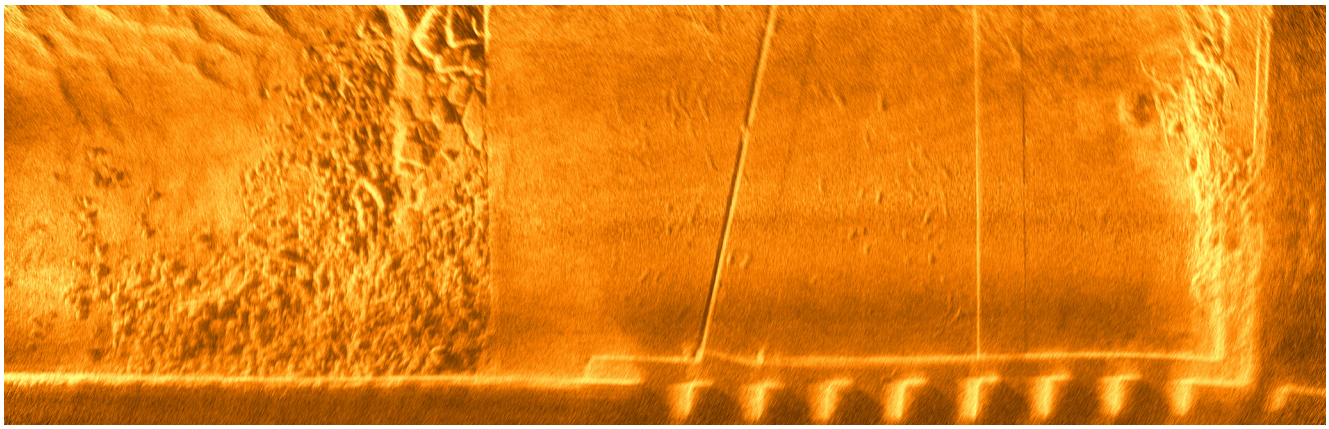
APPLICATIONS

Engineering inspection of underwater infrastructure in the energy, maritime, and transportation sectors, such as quay walls, locks, flood barriers, bubble curtains, bridge footings, and intakes.

Plan view mosaic

This view is for structures that are on the seafloor, such as pipe crossings, anchor blocks, and sunken objects.

Data can be mosaiced automatically using SoundTiles, SAMM, or other third-party software. If positioning data is not available, only SoundTiles can be used.



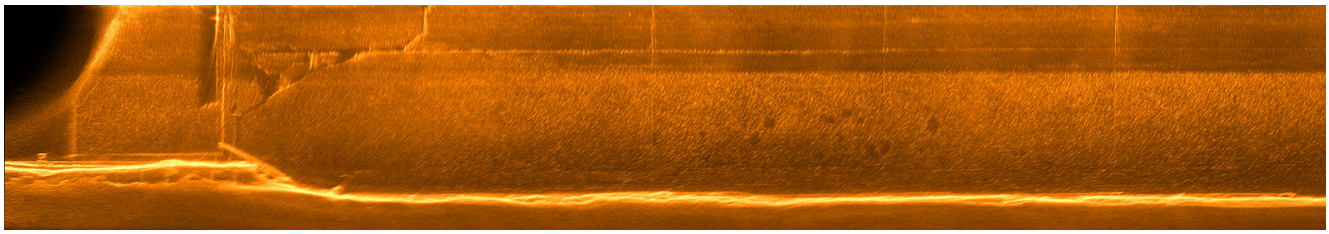
Elevation view mosaic

This view is for structures that are perpendicular to the seafloor, such as quay walls, sheet-pile walls, locks, and flood barriers.

Data can be mosaiced automatically with third-party software, such as SoundTiles, an alternative to manually stitching the image using conventional image-editing software, such as Photoshop.

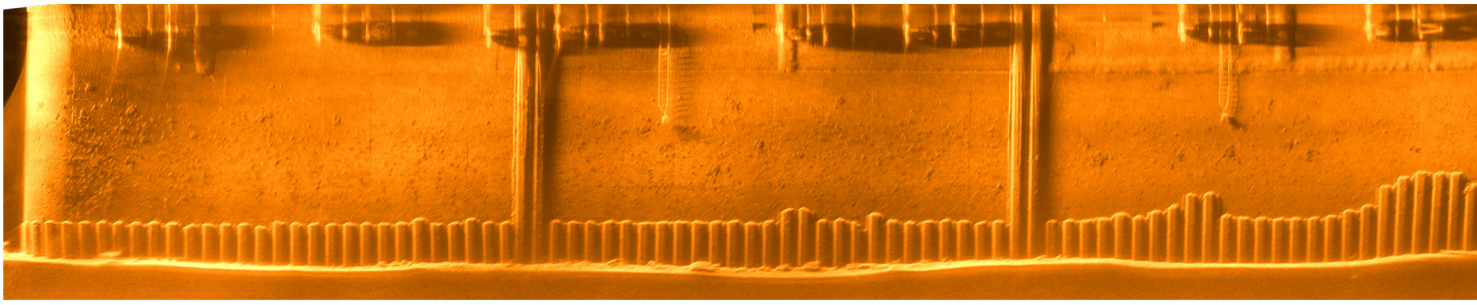
Elevation view example — ship strike

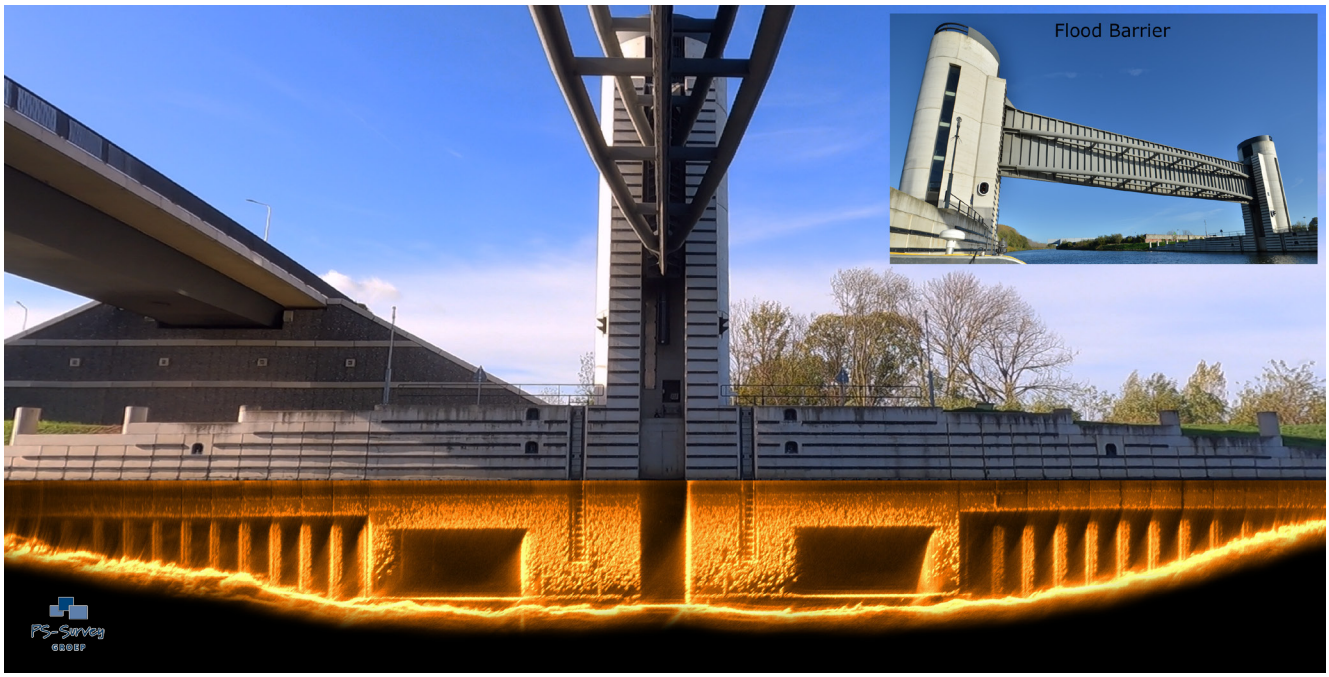
The Infrastructure Inspection System was used to confirm that damage occurred to the entrance of a lock structure after a ship strike. The system was able to measure the size and extent of the damage.



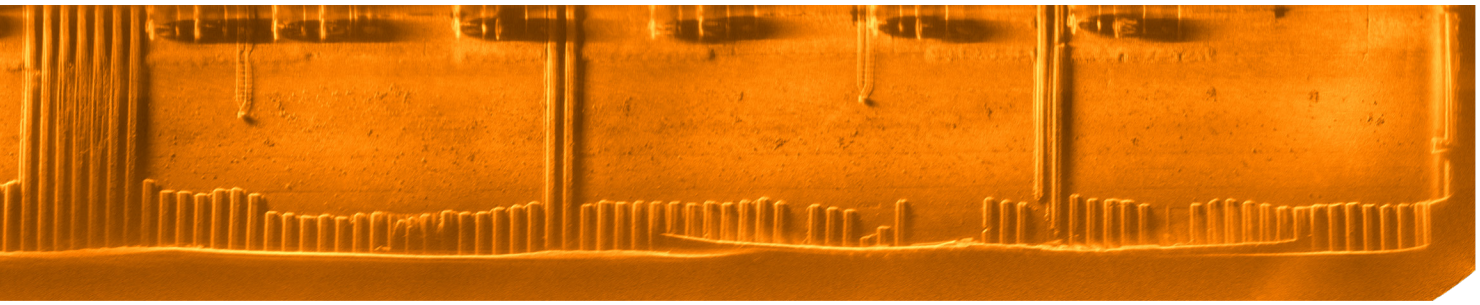
Elevation view example — routine inspection

A quay-wall inspection showed a full view of previous repairs and revealed some areas to watch. The inspection also revealed a section of sheet pile that had separated from the quay wall and is now laying on bottom.





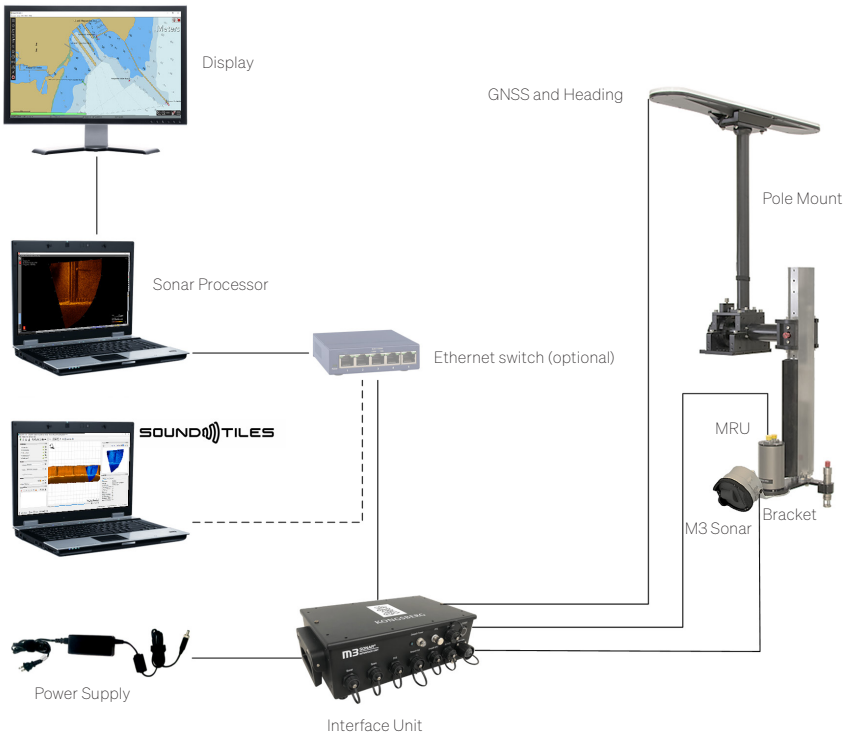
Feature comparison	M3 Sonar® HF for imaging and bathymetry	Flexview HF for imaging only
2D Images	✓	✓
3D Point Cloud	✓	–
For customers who already have a MBES	–	✓
For customers who want the flexibility or to do both imaging and profiling/ bathymetry	✓	–
Need to collect detailed data of the seafloor at depths or altitudes greater than 10 m	✓	–
Need to see fine details in vertical structures 10 cm or less	✓	✓
Requires positioning and motion reference sensors	✓	–
Want to be able to install the sonar on a very small ROV to perform targeted detailed inspections and confirm underwater defects and objects	–	✓

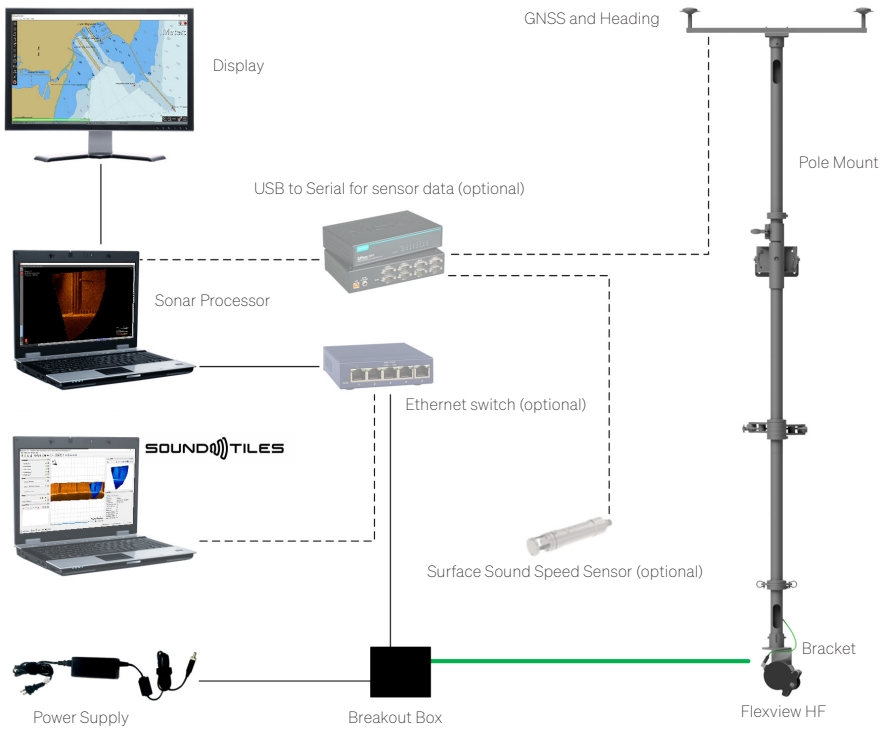


M3 Sonar HF

system configuration

Ideally suited for small survey boats with over-the-side pole mounts or USVs.





Flexview HF

system configuration

Ideally suited for small survey boats with over-the-side pole mounts or USVs. Can also be installed on one-person portable ROVs.

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