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Kongsberg Mesotech is a world leader in the development of products and solutions for underwater acoustic industry with over 40 years of experience. Characterized by exceptional engineering capabilities, the Company focuses on providing customers with superior image resolution by producing quality and reliable equipment. Continuous research and development keeps pace with growing markets and demand as well as changes in customer requirements.

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Benefits of Underwater Inspection & Surveying:
- Improved image resolution
- Accurate data reporting
- No disruption to shipping and lower costs

MS 1000 Scanning Sonar System
The high-resolution scanning sonar head operates on the full MS 1000 version processing software. The MS 1000 software has many advanced features for data interpretation, including the ability to measure length and area, geo-reference and track targets.

1 1171 Series high-resolution sonar heads: A. 510scan imaging transducer; B. fan/cone beam imaging and profiling transducer; C. back-to-back sonar imaging transducer

High-resolution Scanning Sonar offers:
- narrower horizontal beam angle and small angular resolution (for superior image quality)
- tunable frequency transducers (model dependant)
- exposed transducer (to eliminate acoustic focusing)
- increased power output (for better signal to noise ratios)

MS 1000 Processing Software offers:
- 3D profiling possible with rotating device
- Track Planter modules allows user to plot scanned area, generates sonar targets and create CTFIIFs
- networking capability
- target tracking
- simultaneous multiple head operation
Underwater inspection of man-made structures is vital as they age. In addition, water currents, corrosion, and damage from storms and vessels may impact structure integrity. Diving inspections can be costly and dangerous due to a lack of visibility, plus inconsistencies in data reporting are common.

High-resolution scanning sonar provides higher definition images, and the compact size and portability of the equipment enable quick, frequent monitoring. The Kongsberg Mesotech scanning sonar and MS 1000 processing software system is ideal for underwater engineering, search and surveillance applications.

**Profiling Sonar Applications**

Profiling sonar is primarily used for quantitative measurements where a narrow, conically shaped beam generates a single range point for each ping.

**Single Axis Profiling**

The sonar is positioned stationary while the transducer rotates through a selected arc of coverage and generates a line of profile points. To collect a different profile, the sonar head is re-positioned.

**Dual Axis Profiling**

Integrating the single-axis profiling head with a mechanical second-axis drive (rotator) provides 3D capability. After collecting the single-axis profile, the head is rotated by the second axis drive through pre-set increments and the scan process repeats. This generates a star-like pattern of profiles from a single position, after which the processed data generates a 3D point cloud projection.

**Imaging Sonar Applications**

Imaging sonar uses a fan-shaped acoustic beam to scan a specified area or target. Sonar imaging applications include:

- inspection of man-made structures (bridges, docks, piers and dams)
- site and seabed search and survey
- underwater construction support
- positioning stabilization mattresses and cables
- guiding grapples and buoys
- pipeline and cable surveys
- sonar and sediment aggregation monitoring
- monitoring dredging and backfill operations
- diving support
- underwater timber stockpile assessment and recovery operations
- archeological surveying

**Scanning Sonar Applications**

Scanning sonar is used for quantitative measurements where a narrow, conically shaped beam generates a single range point for each ping.

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Top: Pipeline stabilization mattresses (Gulf of Mexico).
Above: Standing trees in flooded reservoir (USA). Data courtesy FBI Dive Team.
Right: Oil platform (Gulf of Mexico). Data courtesy Fugro Chance.
Below: River pipeline crossing (Russia). Data courtesy Peter Diving Services.

**Top to bottom**: Below-waterline acoustic profiling of bridge pier (Finland). Data courtesy VRT Finland OY.
Point cloud projection of under-deck survey (Louisiana, USA). Data courtesy Fenstermaker & Associates Inc.
Dual-axis profiler shipwreck survey (Lake Ontario, Canada). Data courtesy Abnormal Ltd.
Riverbed profile (Finland). Data courtesy of VRT Finland OY.
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Kongsberg Mesotech Ltd.

About Kongsberg Mesotech Ltd.

Kongsberg Mesotech Ltd. is a global leader in the underwater acoustic industry with over 40 years of innovative product development and manufacturing experience. Characterized by exceptional engineering capabilities, the Company focuses on providing customers with superior image resolution by producing quality and reliable equipment. Continuous research and development keeps pace with growing markets and demand as well as changes in customer requirements.

Kongsberg Mesotech supplies a worldwide customer base with products for search and recovery, marine engineering, security and surveillance, fisheries and various other underwater imaging transducers. There is an extensive support network including training, product support and assistance with application and data interpretation.

Kongsberg Mesotech is the Canadian subsidiary of Kongsberg Maritime, a leader in the merchant marine and subsea industries. Kongsberg Maritime is a division of Kongsberg Gruppen (Group), an international technology corporation providing advanced solutions and services to the marine, oil and gas, defense and aerospace industries. The Group is comprised of Kongsberg Maritime, Kongsberg Oil and Gas Technologies, Kongsberg Defence Systems and Kongsberg Protech Systems, all of which focus on delivering high-quality products and premium service to global clients.

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MS 1000 Processing Software offers:

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• Track Plotter module allows user to plot scanned area, georeference sonar targets and create GXML files
• networking capability
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Marine Engineering & Site Inspection

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- Networking capability
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Technical Training
Kongsberg Mesotech provides comprehensive training delivered on-site, at the Kongsberg Mesotech manufacturing facility in Vancouver, Canada or any Kongsberg facility. Kongsberg Mesotech also offers sonar application and data interpretation support.

Repair and Upgrade Services
Equipment repairs are available at Kongsberg Mesotech’s manufacturing facility and strategically located affiliates. Upgrades and major rebuilds are completed at the manufacturing facility.

About Kongsberg Mesotech Ltd.
Kongsberg Mesotech Ltd. is a global leader in the development of products and premium service to global client bases. The group is comprised of Kongsberg Gruppen (Group), an international technology corporation providing advanced solutions and services to the defence, security and aerospace industries. The group is headquartered in Norway.

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Kongsberg Mesotech is the Canadian subsidiary of Kongsberg Maritime, a member of Kongsberg Maritime, a division of Kongsberg Gruppen (Group). Kongsberg Maritime is a division of Kongsberg Gruppen (Group) is an international corporation headquartered in Norway. About Kongsberg Gruppen

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