Wärtsilä ELAC VANGUARD
Enhanced navigation and detection sonar

Wärtsilä ELAC Vanguard Enhanced is the next generation mine and obstacle avoidance for surface ships. The proven naval sonar system ELAC Vanguard has been expanded by significantly increased performance and additional features heavily requested by our customers.
The following basic system configurations are available:

- A 30 kHz version for an installation in a sonar dome or bulbous bow provides detection ranges of up to 5000 yards.
- A more compact version operating at 70 kHz for an installation on a hoisting gear with a detection range of up to 1500 yards. The hoisting gear delivered with the system can be mounted on a simple sea chest.

Both versions are completed by two compact electronic cabinets housing the transmitter and receiver electronics. These ruggedized cabinets have been qualified in accordance with various military standards. Special attention has been paid to limit the size of the components. This eases the integration on board of existing ships compared to one bulky rack.

All system components are designed to provide a high reliability and to minimize maintenance activities and life cycle costs. Exchange of LRU’s is supported by easy access to the PCBs inside the cabinets and a clear, well-structured layout.

**Key Features**

- 3D mine and obstacle avoidance
- Forward looking bottom mapping
- Automatic target detection and tracking
- Automatic alarm
- Open architecture based on OpenDDS middleware
- Optional hoisting gear available
- Compact design for minimum space requirement
- Ruggedized components meet military standards
- Stand-alone or fully integrated solution
- For new designs and refits

**Applications**

ELAC Vanguard Enhanced is a forward looking 3D active sonar designed for mine and obstacle avoidance and forward looking bottom mapping. The system is designed to detect mines and other objects in the water column but also serves as a navigation aid in shallow and dangerous waters.

The forward looking bottom mapping mode enables the sonar to perform a tactical bottom survey giving the operator an indication of the terrain in front of the ship. The seafloor will be scanned and presented in form of a color coded map as well as a 3D graph for further navigational aids.

The system provides a high level of automatization. Signal processing parameters like normalization are automatically adjusted. Targets are detected and tracked automatically although the operator is able to set up target trackers manually. In addition, the system features data recording and playback functionalities, an audio channel to support classification of echoes and various built-in test tools.

The system is based on an open architecture using an OpenDDS middleware. Additional features or customer specific requirements can easily be implemented by Wärtsilä ELAC Nautik, the customer or a third party.

The system can be operated from a single dedicated console or from multiple Multi-Function Consoles already on board. COTS components for display and control can be provided on request.

HMI displaying the bottom mapping mode (above) and the obstacle and mine avoidance mode (below)
## Technical Data

### Typical detection range (30 kHz version)
- Small mines (TS = -15 dB): 2000 yards
- Large objects (TS= 20 dB): 4500 yards

### Typical detection range (70 kHz version)
- Small mines (TS = -15 dB): 800 yards
- Large objects (TS= 20 dB): 1500 yards

### Coverage 3D mine and obstacle avoidance
- Horizontal sector: 90°
- Vertical sector: 12° or 25° (selectable)

### Coverage bottom mapping
- Horizontal sector: 60°
- Vertical tilt: 30°

### Resolution
- Horizontal beam width: 3°
- Vertical beam width: 3°

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Transmitter Unit LGN 19

Processing Unit EE 96

LAG 37 and WB 76

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