The OpenSonarSuite ELAC KaleidoScope is an advanced, totally integrated sonar system that meets the mission requirements of modern diesel-electric submarines. It offers full spatial, full spectral and full temporal coverage.
System overview
Full-spatial and full-spectral coverage

Cylindrical array sonar (CAS)
The cylindrical array sonar provides medium-range surveillance. This includes broadband and narrowband and transient detection, narrowband and DEMON analysis as well as broadband, narrowband and DEMON tracking.

Own ship noise measurement equipment (ONM)
The own ship noise measurement equipment monitors the noise generated by the own ship.

Acoustic intercept sonar (AIS)
Detection and analysis of active sonar pulses. The intercept sonar determines the bearing, performs contact tracking and analysis.

Flank array sonar (FAS)
The flank array sonar provides long-range surveillance. This includes broadband and narrowband detection, narrowband analysis, passive range estimation as well as broadband and narrowband tracking.

Mine avoidance sonar (MAS)
Detection and localisation of mines or obstacles is performed by the mine avoidance sonar. It estimates range, bearing and depth information of the detected and tracked objects.

Active sonar (AS)
The detection and localisation of targets is performed by the active ranging sonar. It estimates range and bearing information of the detected and tracked objects.

Passive ranging sonar (PRS)
The passive ranging sonar provides a medium-range surveillance and passive range estimation based on detected and tracked contacts. This includes broadband detection.

Integration of 3rd-party towed array sonar
The towed array sonar provides long-range surveillance. This includes broadband and narrowband detection, narrowband analysis as well as broadband and narrowband tracking.

Sonar processor
The sonar processor is responsible for all kinds of sonar processing. This includes beamforming, adaptive beamforming, detection, frequency domain processing, analysis, display processing, interfaces to the navigation system, combat system, and many more.
Specifications and technical data
Wärtsilä ELAC KaleidoScope at a glance

ELAC KaleidoScope processes separate sonar arrays by analogue to digital conversion of all hydrophone signals with very high dynamic range and with no need of variable gain control.

ELAC KaleidoScope is able to passively detect, track and analyse surface and sub-surface objects, by using broadband analysis, narrowband analysis, DEMON analysis, intercept analysis, transient analysis and range calculation. The tracking process is based on both automatic initialisation and operator initialisation of tracks. It includes broadband, narrowband line, DEMON line and pulse tracking. Contact data are forwarded to the CMS via Ethernet.

The system has a classification capability that enables the operator to classify the objects detected by the system based on their sound signature. The classification system allows comparison of relevant information for a detected object. The system also allows raw data storing for raw data for reprocessing within the system and external post-processing for later analysis.