Saab Naval Products



SAAB TECHNOLOGIES

SAAB



A world leader in naval systems

With over 80 years of industry experience, Saab has renowned expertise in delivering platforms, combat systems and sub-systems for the entire naval domain.

All naval products and services in the Saab family have an origin in the context of a contested sea.

A highly demanding setting with a high clutter environment and a military geography that generates large variations and highly compressed tactical situations, which constantly challenges you.

From the littorals, Saab has reached the blue oceans with customer navies from different continents and is a trusted partner enrolled for the long run.

This catalogue displays the full range of Saab's naval offer.

Whether fully integrated or as stand-alone solutions, they are all expertly created and fully supported to deliver optimal operational effect.

Find out more by visiting **saab.com**



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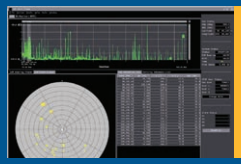
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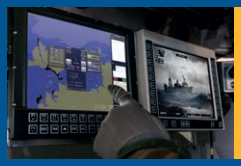
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9LV CS
Combat System

The capability and performance of a modern warship is to a large extent defined by the onboard combat system comprising the ship's sensors, countermeasures, weapons and communications equipment.

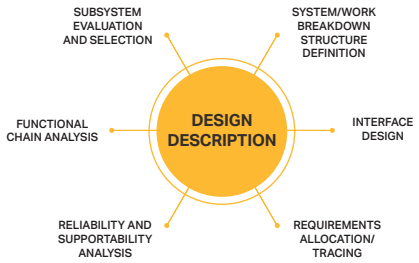
The ambition of each navy and acquisition organisation is to provide the desired operational effect.

On that course, one has to achieve a cost-efficient integration of selected, best-of-breed equipment to create a balanced combat system.

Saab's 9LV Naval Combat System Solution (9LV CS) combined with a proven track-record as a Combat System Integrator and Prime Contractor put that ambition within reach for any new vessel, as well as mid-life upgrades.

The 9LV combat system team has captured the know-how required and applies it to each specific project. Key areas such as risk management requires prior experience and an understanding of the customer's environment. These are essential for the development of a trusted relationship between Saab and yourself as a customer.

Saab has a history of successful partnerships and leading roles in many naval combat system programmes. We have worked with dedicated partners and sub-suppliers in almost all aspects of naval warfare.



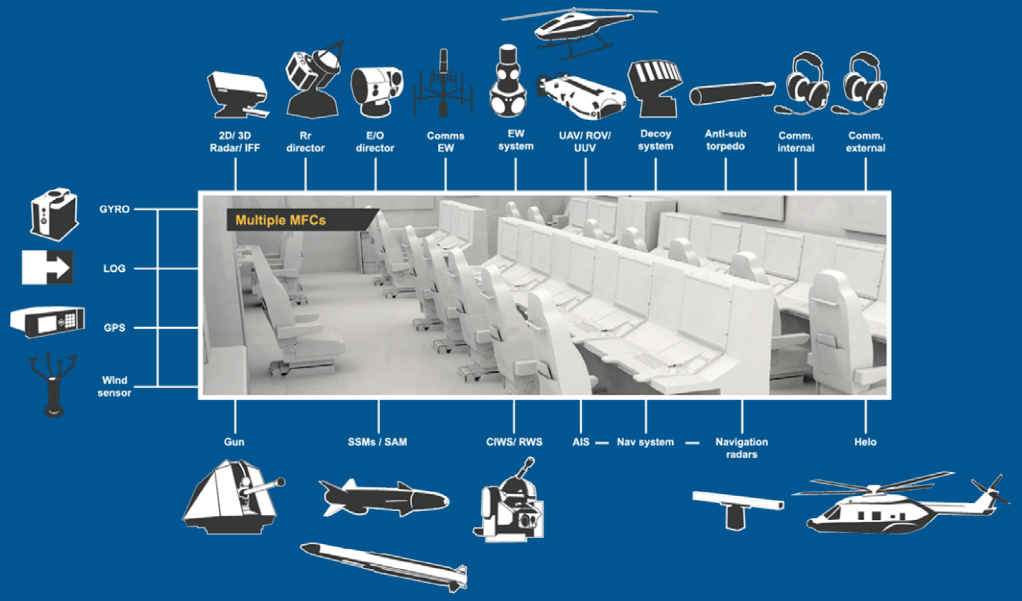
Within a well-balanced combat system, proven and successful integration of third party products is continuously achieved, such as:

- Tactical Data Links (TDL) using multi-TDL processors from several different suppliers
- Radio communications from several radio manufacturers
- Surface-to-Surface Missiles (SSMs) from several different suppliers
- Surface-to-Air Missiles (SAMs) from leading suppliers
- Naval guns of many different calibers
- Anti-Submarine Warfare (ASW) weapons and sub-surface sensors from leading suppliers
- Radar sensors for surveillance and fire control in applications with different requirements than Saab's proprietary solutions

The cornerstone of a successful Saab naval combat system is the use of 9LV CMS as an enabler. The system development has progressed to an increasing focus on the ability to integrate different equipment. The 9LV CMS architecture and design allow the ship's local area network and associated hardware, software and services to extend to all computer equipment on board. This reduces cost and waste, as system capabilities can be shared between subsystems.

For over 50 years, Saab has provided naval combat systems solutions. Saab has installed 9LV systems in various configurations on board more than 250 surface vessels and submarines.





CSE / CSI

Optimisation, design and planning for your vessel

Saab is one of the leading suppliers of integrated solutions to naval vessels, and has been for the last 50 years. Saab has supplied integrated solutions to more than 250 surface ships and submarines.

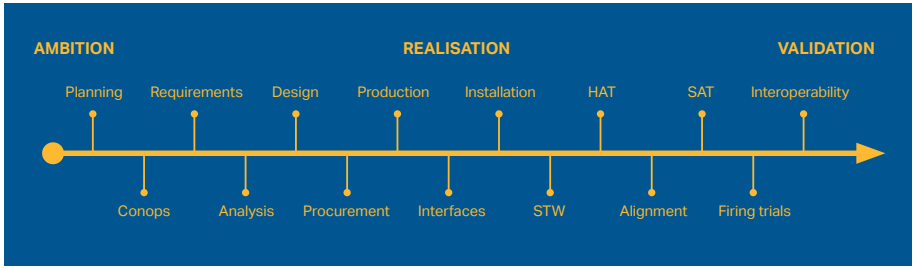
A modern warship is an extremely capable asset, but also a highly complex system-of-systems. Expert skills are required to properly design, build and maintain it. The Combat System (CS), with its sensors, links, weapons and counter-measures and a Combat Management System (CMS) to close the Observe, Orient, Decide and Act (OODA) loop, is possibly the most complex onboard system.

Combat System Engineering and Integration (CSE / CSI) involves understanding the required CS capabilities and associated trade-offs. It enables optimisation of design, planning and performance coordination, as well as control of the complex acquisition and build processes. It enables through-life maintenance and support concepts that maximise a warship's availability throughout its lifetime.

Saab offers CSE / CSI services for the entire life-cycle of the ship, based on our experience of supplying hundreds of ship installations of sensors, countermeasures, weapons and CMS.

Depending on the commercial setup, Saab may take different roles:

- Prime Contractor (PC), with a responsibility to design, build and acquire subsystems and deliver the complete ship with a full logistics package.
- Combat System Prime, with a responsibility to design, build and acquire subsystems and deliver the complete CS.
- Combat Systems Engineering (CSE) provider, with a responsibility to conduct specific CSE activities in support of a prime, acquisition organisation or navy.





Initial studies stage

- Operational capability studies and operations analysis, force and ship optimisation studies for Anti-Air Warfare (AAW), Anti-Surface Warfare (ASuW) and Anti-Subsurface Warfare (ASW) capabilities
- Simulation based functional chain analysis, e.g. scenario definition, AAW kill chain, time budget analysis
- Sensor suite optimisation and ESM / ECM capability optimisation
- Human and social factors, engineering, CIC and operator workload studies

Concept stage

- CS and all-of-ship concept definition
- Needs and requirements definition for system and subsystems, interface definition
- Concept design with respect to sensor, communications and weapons location, ship stabilisation, helicopter and UAV capability, RCS optimisation, EMI / EMC optimisation
- Concept design with respect to command and control, interoperability in combined and joint operations, tactical data links and other information exchange mechanisms
- Program planning, sub-supplier assessment, development and evaluation of commercial and contractual concepts
- Concept validation of system and subsystems

Develop and build stage

- Contractual, commercial and technical management of suppliers of subsystems, including Interface Control Descriptions (ICDs)
- Program monitoring, control and coordination
- Onboard surveys and inspections
- Planning and execution of setting to work, interface verification, Harbour Acceptance Tests (HAT) and Sea Acceptance Tests (SAT), function chain tests, live firing tests and demonstrations
- CS alignment and functional chain calibration
- Integration of a complete logistics package

Maintenance stage

- Monitoring of capability and analysis of impact of changes in threats and other aspects of the environment
- Monitoring of supportability, such as end of life and last time buy
- Maintenance and repair of CS capability
- Planning and execution of continuous capability development and mid-life upgrades

EMI/EMC

Design and analysis

Saab designs and evaluates optimal EMI/EMC technical solutions. These meet customers' needs in terms of products and interfaces as well as functionality, reliability, availability and robustness.

Collocation analysis

Many collocation problems could be avoided by ensuring careful design. Collocation analysis includes studying and simulating the consequences of unwanted phenomena.

Recommendations are provided during the installation design to secure good operational performance for each system.

Antenna analysis

Saab performs directivity pattern simulations and calculations for critical antenna positioning on-board ships.

Estimated range or coverage will also be part of the antenna analysis.

Radiation hazards analysis

Hazards of Electromagnetic Radiation (HER) analysis provides an initial actual study of Radio Frequency (RF) Electromagnetic (EM) fields, as well as analysis of the operational environment and the affects on applicable systems.

There are five different types of analysis included:

- Hazards of Electromagnetic Radiation to Avionics (HERA)
- Hazards of Electromagnetic Radiation to Equipment (HERE)
- Hazards of Electromagnetic Radiation to Fuel (HERF)
- Hazards of Electromagnetic Radiation to Ordnance (HERO)
- Hazards of Electromagnetic Radiation to Personnel (HERP)
- Increased personal safety due to minimisation of potential hazards
- Emission Control (EMCON) and blanking instructions for emitters



9LV CMS

Combat Management System

The 9LV CMS brings information from the ship's sensors, weapons and communications into a single, highly integrated system, providing unsurpassed flexibility.

9LV CMS offers complete C4I for all types of naval platforms, including patrol vessels, frigates, larger vessels and submarines. It provides the command team with outstanding operational capabilities, supporting all mission types from the littorals to the open sea.

The 9LV CMS provides support for interoperability and allied/coalition operations as a part of an international force. Among the other key characteristics it offers are support for command team training, recording and debriefing.

9LV supports the three dimensions of naval warfare – air, surface and sub-surface, as well as the internal decision cycle.

9LV CMS is well adapted for a range of mission types at all levels of conflict, such as:

- Anti Access / Area Denial operations
- Protection and escort
- Maritime patrol and response
- Border control and Interdiction
- Peace support operations
- Anti-piracy
- Search and rescue
- Environmental control

The 9LV software follows the principles of Naval Open Architecture (NOA). NOA involves creating modular, interoperable systems that adopt open standards and have published interfaces. This approach reduces system and lifecycle cost and mitigates risks by avoiding technology obsolescence, unwanted ties with proprietary or vendor-unique technology and reliance on a single source of supply.

9LV CMS includes the highly effective 9LV FCS (Fire Control System). More information about these integrated capabilities can be found in the 9LV FCS chapter.



The Future Operator Workspace, a concept multi-functional console with the operator in focus.







9LV FCS

Fire Control System

The high performance 9LV FCS provides rapid, reliable engagement against any target in any environment, ranging from asymmetric surface threats to advanced sea-skimming missiles.

The 9LV Fire Control System (FCS) can be provided as an integral part of the 9LV CMS (see 9LV CMS chapter) or as a stand-alone fire control solution to be integrated with a third-party Combat Management System (CMS). It will suit any new-build or mid-life upgrade.

The ability to deal with the demands of multiple incoming targets and tight time constraints sets the 9LV FCS apart from the competition.

9LV FCS is a proven solution suitable for all platforms, including patrol vessels, frigates and larger ships. 9LV FCS allows the operator to excel in defending their vessel by:

- Minimising time of engagement
- Optimising weapon and sensor usage against multiple threats
- Enabling rapid designation, search and acquisition phases
- Reducing operator workload in critical conditions

The main components of the 9LV FCS are:

- CEROS 200 and EOS 500 fire control directors
- The Multi-Function Console (MFC) with 9LV FCS hardware and software
- The available weapons such as a SAM or a gun

CEROS 200 and EOS 500 are combat proven and renowned for being outstandingly accurate. Optimised together with the other parts of the system they provide a sensor-to-shooter cycle that is extremely fast and accurate.

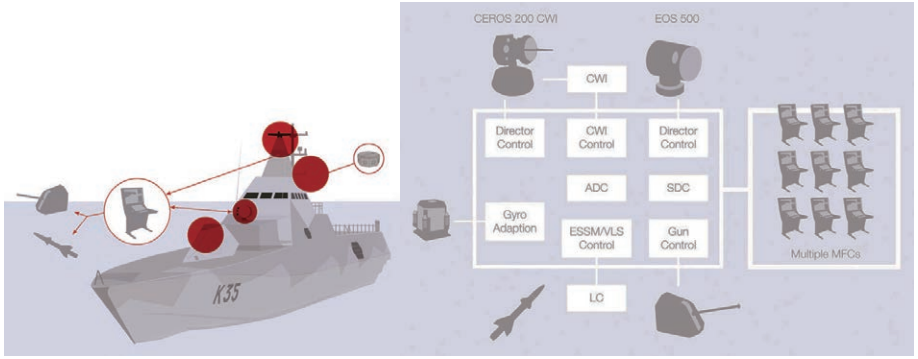
Saab's Air Defence Coordination (ADC) is much more than a normal threat-evaluation and weap-on-assignment function (TEWA/TEWA+). It is a performance-based planning and engage-ment function for anti-air warfare. ADC uses all combinations of sensors, weapons, and ship manoeuvres, as well as electronic support and countermeasures. This achieves an optimal outcome in any engagement.

ADC is based on probability calculations and optimises survivability by evaluating all possible threat-engagement combinations in real time. This provides support to operators or executes the engagement in fully automatic mode.

9LV FCS comprises a corresponding Surface Defence Coordination (SDC) against directly attacking surface threats (e.g. an attack by high-speed craft).

9LV FCS also includes support for planning and execution of ASuW and ASW missions with full support for Surface-to-Surface-Missiles (SSM) such as RBS15 and torpedoes such as Saab LWT and HWT.

9LV FCS is based on a modular and open archi-tecture that makes the addition of third-party systems efficient and reliable, and enables easy integration of 9LV FCS into any naval vessel and CMS.





CEROS 200

Radar and optronic tracking Fire Control Director

The high performance 9LV FCS provides rapid, reliable defence against any target in any environment, ranging from asymmetric surface threats to advanced sea-skimming missiles.

CEROS 200 CEROS 200 is a world-class performer in terms of automatic target detection and lock-on.

It offers high acquisition speed and great precision, together with the ability to track any target in any weather situation, while enabling fast target switching.

CEROS 200 has been operated successfully in all conditions, from arctic to tropical, and can be combined with the 9LV (CMS or FCS) to provide precision control for any naval gun or SAM missile system.

Several CEROS 200, EOS 500 electro-optical tracking systems, gun fire control and missile control modules can be combined in a 9LV fire control subsystem, where operators dynamically allocate any combination of tracker and weapon to handle surrounding threats.

The CEROS 200 incorporates CHASE, a patented method for processing complex radar target return signals from low flying targets – such as sea skimming missiles – to eliminate multipath effects.

CEROS 200 is available in a CWI configuration providing an additional x-band channel for target illumination and control of semi-active missiles

Combined with Saab's gun fire control, CEROS 200 provides unparalleled accuracy for gun engagements.



CEROS 200 with Continous Wave Illuminator.

Radar design

Depending on the clutter situation and Electronic Countermeasures (ECM) threat, the radar selects its frequency agility pattern between 32-pulse bursts and pulse doppler signal processing, 4-pulse bursts and moving target indication processing, or pulse-to-pulse agility. The pulse repetitive frequency and pulse width are selected depending on the proximity of the target. The digital receiver, in combination with the improved signal processing, enables a higher degree of flexibility of pulse length and waveform, e.g. for adapting to new threats.

The transmitted pulses are frequency coded and pulse compression in the receiver ensures a high range resolution in all modes.

The radar design incorporates many Electronic Counter-Countermeasure (ECCM) features:

- Very low antenna side lobes
- Very wide bandwidth
- A large number of transmission frequencies
- Random selection of frequency
- Lock-on jam, track-on jam

Technical specifications

Tracking radar	
Frequency range	Ku-band, 2 GHz
Pulse compression	Frequency coded
Radar bandwidth	Very wide (12%)
Antenna	
Type	Cassegrain with multimode feed, 1 m antenna dish, beam width: 1.5°
Transmitter	
Type	Grid-pulsed helix TWT
Number of frequencies	>100
Transmission patterns	Pulse doppler: 32–pulse batches
MTI	4–pulse batches
Frequency agility	Pulse–to–pulse frequency agility
Stabilised platform	
Type	2-axis, elevation over azimuth
Angular speed	2.5 rad/s
Angular acceleration	Azimuth 7.4 rad/s^2, elevation 10.5 rad/s^2
Dimension and weight	
Height above deck	Approximately 2 m
Diameter	Approximately 1.6 m
Weight	625–750 kg depending on version
IR Thermal Imager	
Type	4th generation
Wavelength band	3–5 µm or 8–12 µm
TV Camera	
Type	CCD sensor
Output	Colour or B/W
Field-of-view	1 to 2 fixed FOV's
Laser Rangefinder	
Wavelength	Eye-safe region
Frequency	From Single shot to High pulse repetition



EOS 500

Lightweight Electro-optical Fire Control Director

EOS 500 is a lightweight electro-optical fire control director for use on all naval ships. It is an excellent choice for observation, target identification and fire control. The inherent video tracker provides automatic detection of up to four concurrent threats, enabling the operator to change target within fractions of a second.

EOS 500 includes a stabilised platform with three electro-optical sensors. The modern modular design enables the sensors to be upgraded easily. The high quality stabilisation and advanced TV & IR cameras and laser rangefinder provide operators with an efficient solution for observation, target identification and fire control.

EOS 500 is capable of tracking all types of threats including sea skimming missiles. The advanced Saab video tracker uses simultaneous input from the TV and the IR camera in a data fusion process. The system provides automatic detection of up to four concurrent targets, thus enabling the operator to easily acquire and change targets swiftly. It uses high accuracy 3Dtracking.

The EOS 500 can be offered as a part of a 9LV combat system solution, or can be combined with components such as CEROS 200 radar, EO tracking systems, gun fire control and missile control modules to form a weapon control system. Such a setup enables operators to dynamically allocate any combination of tracker and weapon for flexible handling of surrounding threats or use them as stand alone systems. EOS 500 control can also be integrated into any modern Multi-Function Console (MFC).

Features

- Very high accuracy 3D-tracking via TV, IR and LRF
- Simultaneous TV and IR tracking
- Fully automatic target detection and lock-on features
- Very high stabilisation accuracy
- Capable of tracking four targets simultaneously within the field of view
- Fast target switching
- Very short reaction time and fast tracking
- Advanced background suppression algorithms
- Automatic data fusion



Technical specifications

Stabilised platform	
Type	2-axis, elevation over azimuth
Angular speed	> 3 rad/s
Angular acceleration	> 10 rad/s^2
Weight	Approx. 140 kg incl. sensors
IR Thermal Imager	
Type	4th generation
Wavelength band	3–5 µm or 8–12 µm
TV Camera	
Type	CCD sensor
Output	Colour or B/W
Field-of-view	Fixed values or zoom
Laser Rangefinder	
Type	Diode pumped or OPO-shifted
Wavelength	> 1.5 µm (eye-safe)
PRF	Up to 10 Hz
Misc	
Power	115 / 230 V, 50-60 Hz, 3 kVa
Communication interface	Ethernet TCP/IP
Environmental conditions	Compliant with military standards

Integrated Training Environment (ITE)

With Saab's Integrated Training Environment (ITE), you can train personnel in different roles using different systems simultaneously.

New training paradigm

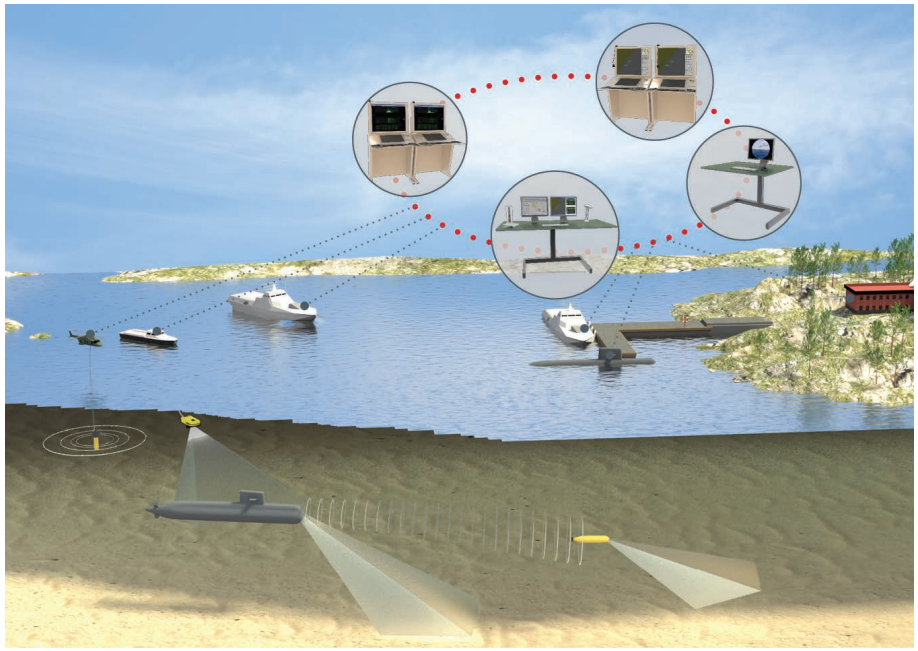
Saab's ITE makes it possible to build land-based training facilities. These can operate as standalone systems or be connected to platforms with embedded training. It caters for future requirements by enabling new simulations to be added when needed.

Saab's ITE starts with the integration of two systems and continues all the way to a 'system of systems'.

This method of integration gives you full control of the information flow between the systems, as well as common resources such as terrain databases and Computer Generated Forces (CGF).

The more systems that are integrated, the greater the demand to control the ones that are involved in a specific exercise.

The ability to control and manage these systems is essential to maintaining the quality of a training exercise and to achieving the training objectives.





Full control of participating systems

The ITE provides full control of participating systems and gives you the ability to start and stop any applications that are part of a selected exercise.

This capability is essential to enabling people using geographically distributed systems to participate in such an exercise.

The system also features monitoring and recording of information. The better the control of the infrastructure, the higher and more precise the training value.

Interoperability solved

With Saab's ITE solution, the problem of interoperability between different simulation and training systems has been solved.

Unlike other solutions, our approach gives you the capability to integrate without changing anything in the respective systems.

Using an appropriate plug-in driver, different systems can communicate and exchange information, no matter what communication protocols they have.

ITE supports several standards and architectures, for example HLA, DIS, Link16, MIP, etc.

Sea Giraffe 4A

Medium/Long range multi-mission surveillance radar



With solutions that deliver a higher level of awareness, you create time to act and arm your forces with the power to manage any threats in any waters. Sea Giraffe 4A is a powerful, fully coherent and multi-role 3D naval radar system.


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The Sea Giraffe 4A combines the battle-proven designs from the Sea Giraffe AMB and ARTHUR product families with an all-new radar sensor, based on AESA (Active Electrically Scanned Array) technology. The Giraffe S-band AESA family design enables scalable and customised configurations, rotating or fixed face, depending on operational needs. The radar is technically designed for easy upgrading to meet tomorrow's mission requirements and overcome future threats.

With the Sea Giraffe 4A the commanding officer will have access to very high situation awareness through simultaneous air and surface surveillance, together with uncompromising self-defence capabilities.

This new radar offers exceptional range, performance and multi-functionality in a single compact solution.

This is achieved by providing simultaneous:

- Automatic air and surface surveillance and tracking, including tracking-on-jam
- Classification and identification of targets, including hovering and moving helicopters
- Target indication to weapon systems for both anti-air and anti-surface engagements
- 360° mortar/rocket alert and weapon location
- Target designation for long range surface-to-air missiles

The Sea Giraffe 4A scans the search volume with 60 rpm and provides an unparalleled 3D target update rate, along with high altitude coverage and monopulse accuracy.

The radar simultaneously detects small fast-moving targets at all altitudes and in severe clutter. The surface channel gives a high probability of detecting very small targets in close proximity to the surface, for example RIB boats and periscopes.

Reliable and easy to operate

The superior system availability (with high MTBCF and advanced BIT) provided by Sea Giraffe 4A will greatly reduce the required investment in onboard and depot spares.

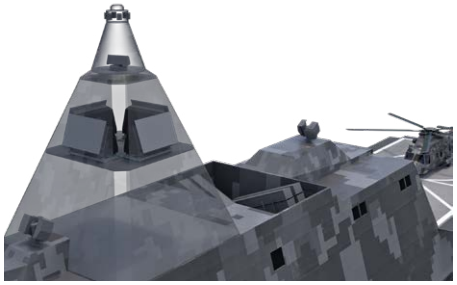
Minimal operator training and maintenance requirements will significantly contribute to reducing the total cost of ownership.

Extensive countermeasures capabilities

The Sea Giraffe 4A provides extensive Electronic Counter-Counter Measures (ECCM) to meet the complex ECM environment of today and tomorrow.

The system also provides methods for countering noise and deceptive jamming and chaff. These include:

- Ultra-low side-lobe levels including side-lobe blanking
- Frequency agility: pulse-to-pulse, burst-to-burst and scan-to-scan frequency agility
- Constant False Alarm Rate (CFAR) to reject false alarms caused by clutter and/or noise jamming
- PRF switching and PRF stagger with random jitters
- Intermittent (or random) transmission to confuse hostile ESMs and anti-radiating missiles
- Sector transmission that can be independently defined by the operator
- Automatic selection of least jammed frequency
- Automatic jammer detection and tracking in both azimuth and elevation
- LPI waveforms



Sea Giraffe capabilities

- Simultaneous air and surface surveillance
- Multi-role capabilities
- C-UAS through Drone Tracker Functionality
- Sense and warn
- Excellent small target detection
- Fast reaction time for all targets
- Extensive Electronic Counter-Counter Measures (ECCM)
- Small footprint – physically and weight

Sea Giraffe AMB

Medium range multi-mission surveillance radar



With solutions that deliver a higher level of awareness, you create time to act and arm your forces with the power to manage any threats in any waters.

Sea Giraffe AMB, designated AN/SPS-77 in some markets, is designed to maximise naval commanders' response time.

The Sea Giraffe AMB multi-role 3D radar is powerful, but still very compact and lightweight. It is the result of Saab's expertise and long experience in the field. Saab has supplied more than 500 radars to over 30 countries across the world, and continues to push performance boundaries.

The Sea Giraffe AMB is effective and reliable:

- Instantaneous and simultaneous 0-70º coverage on all antenna revolutions
- Supreme detection range for high speed targets and small RCS surface targets
- High degree of automation to support fast and accurate decision-making
- DDS (Data Distribution Service) interface for easier CMS integration

The Sea Giraffe AMB is designed to be an efficient medium-range radar which offers outstanding performance in both littoral regions and blue waters.

Sea Giraffe AMB provides a full range of functions for simultaneous:

- Air surveillance and tracking, including tracking-on-jam
- Surface surveillance and tracking
- 360º mortar/rocket detection and alert (RAM)
- Target classification of both moving and hovering helicopters
- Navigation/close combat
- Target indication to weapon systems for precision anti-air and anti-surface engagement
- Gunfire support, including high resolution splash spotting

The radar simultaneously detects small fast-moving targets at all altitudes and in severe clutter. The surface channel gives a high probability of detecting very small targets in close proximity to the surface, for example RIB boats and periscopes. The radar has been proven in all kinds of environments, including regions with extensive ducting conditions.

Multiple digitally shaped narrow receive beams are used, which results in high altitude coverage and monopulse accuracy throughout the entire elevation. The radar covers the full search volume every second.

In order to relieve operator interaction, Sea Giraffe AMB provides fully automatic operation for both air and surface targets, supported by a variety of different clutter maps and doppler processing capabilities to eliminate both land and weather-driven clutter.

Sea Giraffe AMB provides superior overall performance compared to other naval 3D radars in the same class. It provides the most comprehensive Electronic Counter-Countermeasure (ECCM) capabilities currently available, including ultra-low antenna side-lobes.



Sea Giraffe capabilities

- Simultaneous air and surface surveillance
- Multi-role capabilities
- C-UAS through Drone Tracker Functionality
- Sense and warn
- Excellent small target detection
- Fast reaction time for all targets
- Extensive Electronic Counter-Counter Measures (ECCM)
- Small footprint – physically and weight

Sea Giraffe 1X

Lightweight multi-mission surveillance radar



With solutions that deliver a higher level of awareness, you create time to act and arm your forces with the power to manage any threats in any waters. The Sea Giraffe 1X is optimised for maritime security but its capabilities reach well beyond to serve the many dimensions of naval conflicts.

The Sea Giraffe 1X is based on over 60 years of radar development. A multi-purpose, lightweight 3D AESA radar system, it operates on the X (I/J) band and offers outstanding performance.

The Sea Giraffe 1X makes maritime platforms more capable and better prepared to execute missions in the world's littorals. It is the perfect choice for navies and coast guards looking for a system with significantly higher performance than ordinary navigation radars. For example, Sea Giraffe 1X provides comprehensive Electronic Counter-Countermeasure (ECCM) capabilities.

Detection superiority

The Sea Giraffe 1X provides quick and reliable detection of surface and air targets including sea skimming missiles with very small radar cross-sections.

Thanks to Saab's world-leading naval radar technology, this capability is also maintained in the extreme clutter conditions of littorals. The Sea Giraffe 1X covers the entire search volume every second and provides accurate 3D data for all air targets in the search volume. The automatic tracking functionality provides quick and reliable feedback to the operator. The radar is capable of distinguishing between fixed wing, rotary wing and surface targets.

Light-weight efficiency

The total system weight is less than 150 kg and the topside weight is 100 kg. This low system weight, together with its very low power consumption, makes Sea Griraffe 1X suitable for use not only on smaller vessels, but also as a radar complement on larger ships.

Even with the high level of performance provided by Sea Giraffe 1X, its value for money is ensured by leveraging the standardised baseline components within the well-established Sea Giraffe product line. With this approach, Saab can also offer a cost-effective service and support solution specially designed to meet the needs of Sea Giraffe 1X customers.

Low lifecycle cost

The Sea Giraffe 1X has a high Mean Time Between Critical Failure (MTBCF). This, coupled with the system's advanced BIT, results in minimal staffing and maintenance requirements, as well as low overall lifecycle costs.

ILS – Integrated Logistics Support

ILS is an important part of the system delivery and forms the basis for future maintenance.

Saab ILS experts have solid experience in tailoring ILS deliveries together with customers worldwide.



Sea Giraffe capabilities

- Simultaneous air and surface surveillance
- Multi-role capabilities
- C-UAS through Drone Tracker Functionality
- Sense and warn
- Excellent small target detection
- Fast reaction time for all targets
- Extensive Electronic Counter-Counter Measures (ECCM)
- Small footprint – physically and weight

Radar upgrades (SPS49)

Maximising your system's lifecycle

Saab's field proven radar upgrade solution provides an economical way to extend the service life of radar systems, significantly reducing overall ownership costs.

Over the years, Saab has upgraded hundreds of military and civil radar systems. Saab's Radar Upgrade Solution comprises a suite of operationally proven radar upgrade technologies that includes both modern hardware and software.

The solution is designed to meet current and future operational challenges, while at the same time remaining cost-effective throughout the entire radar lifecycle.



Tailored to precise customer needs

The radar upgrade solution is based on modular technology, which makes it easily adaptable for 2D and 3D radar systems. Major signal or data processing, receiver/exciter components and even radar transmitters are fully replaced.

Cost saving and adaptability

The adaptability of the Saab Radar Upgrade Solution means it can be configured to meet the performance requirements of most systems available today.

The modular open system architecture design means it is not necessary to port or recode software from the older radar design, which minimises costs.

By using a single 19" equipment rack of Commercial Off The Shelf (COTS) hardware, the Saab radar upgrade kit offers a more space-efficient replacement for multiple electronics cabinets.

Any unsupportable software associated with aging radar systems is thereby rendered completely redundant.

Installation, testing and evaluation

We work closely with our customers to ensure they realise the improved radar's full operational capabilities.

Saab's technicians perform the initial installation of the radar upgrade kit, with the participation of customer technicians if and when required. The radar can be further adapted on site.

Final acceptance testing and performance evaluation may then be conducted using Saab's diagnostic Radar Analysis Support System (RASS) tools.



With this performance and checkout software, the antenna can be modelled and waveform adapted to optimise the final performance setting for each Saab radar system upgrade.

High reliability, low costs – fewer components

Saab's Radar Upgrade Solution leads to a ten-fold reduction in the number of Line Replaceable Units (LRUs) required within a modernised radar system.

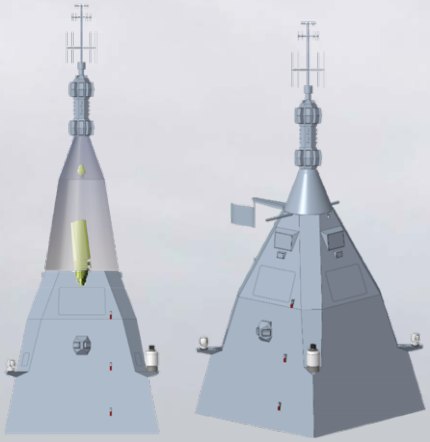
Aging radars often depend upon signal or data processing components enclosed within numerous electronics cabinets.

Typically, older hardware-intensive signal or data processing components require more than 500 individual LRUs. They sometimes use obsolete parts that are no longer available from the original manufacturer.

The modernised Saab Radar Upgrade Solution requires less than 50 LRUs, which helps to reduce costs.

SLIM
Saab Lightweight Integrated Mast

A multi-capability top-deck mast for the naval domain that accommodates housing for all major radars, sensors and antennas.



Saab Lightweight Intergrated Mast (SLIM) means that Saab takes a holistic responsibility for the sensor performance and integration, top-deck design, structural tolerances, interfaces and installation.

Key features

- Lightweight design
- Optimised operational performance
- Turn-key solution
- Flexibility/Modularity/Scalability
- Customer tailored

Saab has designed and built composite masts for decades. Now, Saab has developed the technology into fully equipped, tested and verified masts suited for the prime contractor shipyard.

Derived from the stealth Visby-class corvette's 100-percent carbon fibre hull construction, Saab has successfully introduced SLIM on the market for surface combatants.

SLIM on Pohjanmaa class corvette for the Finnish Navy

The Finnish Navy Pohjanmaa class role corvettes, currently under construction, is equipped with Saab Lightweight Integrated Mast (SLIM).

It includes Saabs Sea Giraffe 4A FF, Sea Giraffe 1X, IFF, Electronic Warfare Suite, EOS, communication antennas as well as ship yard equipment such as fire detection and extinguishing, CBRN pre-wetting and wash-down system, HVAC, navigation lights and meteorological sensors.



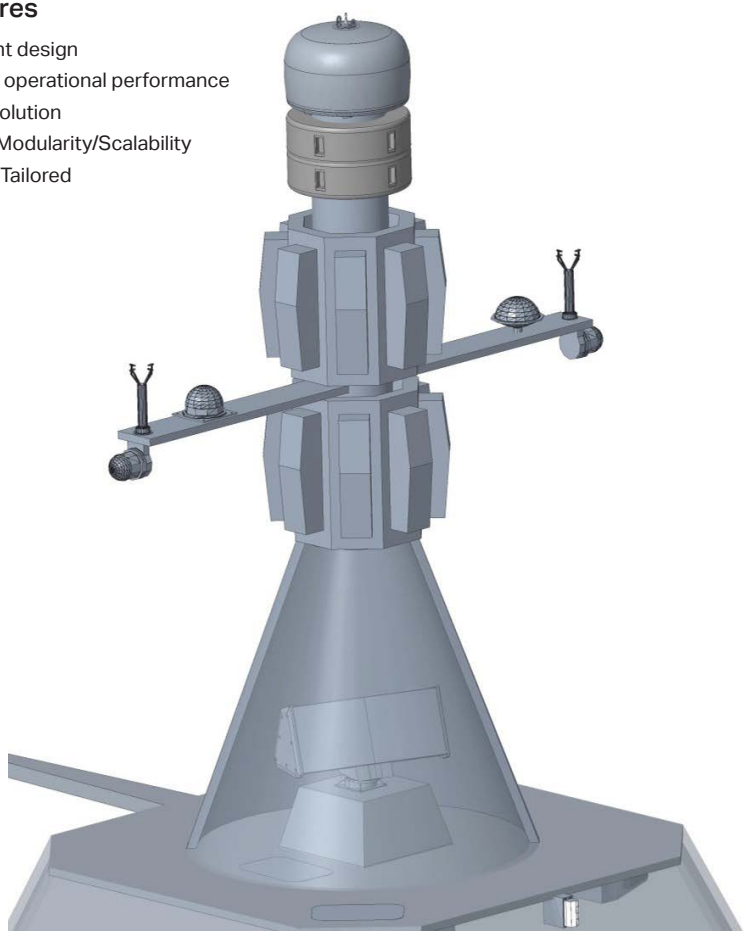
Saab Radome

Lightweight and flexible

Saab Radome is a lightweight solution that minimises the signature and enables installation of additional equipment over the surveillance radar, providing 360-degree unobstructed view. Designed and optimised for the Sea Giraffe family of radars but can be customised for any other radar solution.

Key features

- Lightweight design
- Optimised operational performance
- Turn-key solution
- Flexibility/Modularity/Scalability
- Customer Tailored



Sea Giraffe with Radome on Visby Class Corvette

Composite superstructure

Reduce weight – improve performance

Derived from the Visby-class corvette's 100-percent carbon fibre hull construction, Saab has successfully introduced the composite superstructure concept on the market for surface combatants.

Driven by an ever-increasing trend to put sensors and weapons high up in the ship, a composite superstructure enables ship designers to reduce top weight and improve stability.

A modern high-tech laminate of carbon fibre is one of the strongest, but lightest, materials known to mankind.

Saab composite superstructure concept is an affordable lightweight non-corroding alternative to steel or aluminium structures that saves around 50% in structural weight.

Key benefits:

- Optimised metacentric height, with improved sea-keeping, stability and roll characteristics as a result.
- Less power (and fuel) to achieve contractual speeds – or higher speed can be achieved if same power is applied.
- Substantially lower follow-on maintenance and painting costs.
- Carbon fibre inherently shields against a wide range of electromagnetic signals and is therefore an important component to the Visby-class corvette's phenomenal stealth properties.





Singapore LMV



Saab has delivered eight composite superstructures to Singapore shipyard STM (Singapore Technologies Marine) for the Littoral Mission Vessels (LMV) built for the Singapore Navy. The carbon fibre structures was fabricated in Sweden and shipped to Singapore, where they were installed to the steel hulls made at STM. The LMV class are 80-meters and displace at 1,200 tons.

P28 Corvette for Indian Navy

Saab has delivered two composite superstructures to INS Kiltan and INS Kavaratti, for the Indian Navy P28 corvette program. The P28 Kamorta class are 109-metres and 2,500-ton Anti-Submarine Warfare (ASW) corvettes, built by Indian Garden Reach Shipbuilding and Engineering (GRSE) in Kolkata. The Indian superstructures almost equals the size of Visby-class corvettes.

Modules, interface and support

Saab has developed a complete package for the introduction of a composite superstructure concept into an existing design and production environment for steel hull ships.

The structure can be fabricated in modules, hence making the modules easier to handle and enables them to be shipped by ordinary cargo transport means, to the ship construction site.

A special-developed composite-steel interface has been developed, to facilitate efficient installation by the local shipyard. Saab provides the necessary training and support to the local yard in the installation process.



In 2024 Saab signed a contract to supply six composite superstructures for Multi-Role Combat Vessels (MRCV), to the Singapore Navy. The contract includes detailed design, production, and final assembly of the composite superstructures.

Submarines



Acting undetected

Submarines are unique tools for securing national interests. In a world where any movement or asset is exposed, being able to act undetected has never been more crucial.

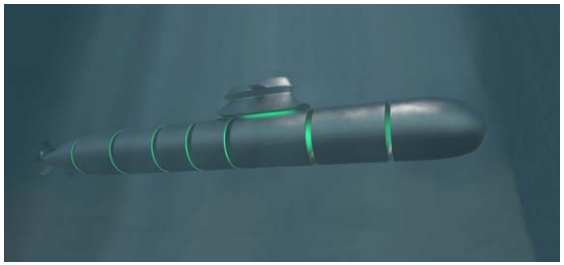
Submarines play a vital role in a wide range of naval operations and tasks, from peacekeeping to warfare operations, in both offensive and defensive roles. Our segments of conventional submarines are based on a mix of size and technological complexity.

By combining a unique range of capabilities, state-of-the-art technology for low signature, high automation for lean crew, Air-Independent Propulsion (AIP), high endurance, versatile combat system suite with integration of a variety of weapons, we have created shockresistant, modular designed submarines for maximum operational flexibility.

Our submarines are always at the forefront of new developments.

Future-proof modular design

Saab's submarine classes are all based on generations of evolutionary design. Our submarines offer a flexible approach, meeting various needs of different navies thanks to modular design. This flexibility is also securing upgrades and modifications, making the submarines future-proof over time. Modules are designed depending on operational and tactical needs. Equipment installations can be easily accessed for maintenance and upgrades at any point in the submarine's lifecycle.



Our underwater advantage:

Reliability
Reliability of systems is the key to a successful submarine operation. Reliability is not only systems that never fail, but more about built in redundancy and the possibility to maintain and troubleshoot the submarine during an operation. Systems and components will fail during a life time. Therefore our design and philosophy is that this should never impact the submerged mission.

Low signature
Our submarines are truly difficult to detect due to extremely low signature in all aspects. They have undergone substantial development to ensure low, controlled and balanced signatures as they carry the pedigree from the cold war and the most demanding environment of the shallow and brackish waters of the Baltic Sea.

Shock Resistance
In both peace and war time and everything in between a submarine can be exposed to under water explosions, making shock resistance a prerequisite for all operations. Our submarines are designed to withstand significant shock loads from underwater explosions, primarily from mines and depth charges. All our submarines are shock resistant verified through live fire testing of first in class.

Evolutionary Design
Our more than one hundred years of submarine design has been in the forefront of innovation, and far ahead of our competitors. Due to our small series of many classes our design has had the possibility to evolve in incremental evolutionary steps, enabling state of the art platforms.

Extended submerged range
Stirling AIP has been proven to be a mature and robust technology giving endurance and reliability to remain under water. AIP mode enables the submarine to operate for an extended time, without breaking the surface for charging the batteries by the diesel engines. Together with emerging battery technologies that can provide higher energy density, this provides a robust and reliable energy solution maximising mission success.

Combat Power
Our submarines carry an array of effectors and sensors. To be efficient in combat the key is to maintain the initiative to your opponent. With our stealth submarine we are able to give our sensors and effectors the advantage in information and position.

High automation
High automation of our systems opens up the possibility to continuously reduce the crew size by making operations more and more efficient. Crew size is a major impact on endurance and submarine footprint. Through optimisation of Human Machine Interface (HMI) with the platform this reduces the workload of the crew and at the same time increases safe operations.

Replenishment
On the surface a submarine is exposed, and in many cases, helpless to threats on the surface and in the air. Our submarines are designed to be on the front line in contested areas as they have an extremely short replenishment time, on shore or at sea via a support vessel. Weapons, fuel and consumables can be brought onboard effectively, enabling the submarine and crew to return to the safety under the surface.



Submarines

Saab's submarine range includes larger and smaller submarines designed for an adapted variety of missions and requirements. Specifications of each submarine segment are tailored to customer requirements and operational needs.

Our Oceanic submarine

The leading product in the Oceanic segment is the 2 000 ton heavy Blekinge-class A26 submarine, currently in production for the Royal Swedish Navy. This state-of-the-art submarine allows accommodation of a larger and more versatile suite of weapons, various crew sizes, highly efficient AIP systems and a Multi Mission Portal significantly increasing the operational scope.

Our Expeditionary submarine

Submarines in the Expeditionary segment, such as the C71, are the largest in the series, designed for longer missions, greater crew size and increased weapon payload capability. Expeditionary submarines enable long-distance operations in all kind of environments, suitable for any navy, using forward deployment of their submarines on extended missions.



Visby-class corvettes

Virtually invisible in all signature bands, the innovative and powerful Visby-class corvettes from Saab continues to set the world benchmark for littoral fighting ships. Stealth, shallow draught, speed and fighting power makes Visby-class corvette a truly formidable surface combatant in the littoral arena.

Visby-class corvette is a flexible surface combatant, designed for a wide range of roles: anti-surface warfare (ASuW), anti-submarine warfare (ASW), mine countermeasures (MCM), patrol and much more.

Gone are the days when the mere firepower of a ship was sufficient for its own protection. The concept today is action before – or even without – being detected.

All-carbon fibre

The all-composite carbon-fibre sandwich hull and superstructure allows the 650-ton Visby-class corvette the same payload capacity as that of a steel ship. At the same the carbon-fibre means that the Visby-class corvette has at least a 50% reduction in displacement compared with a steel ship.

Resulting combat advantages are: higher speed for the same power as conventional metal ship of the same dimensions, as well as greater manoeuvrability and shallower draught – both important tactical considerations in littoral waters.



Visby-class corvette's all-composite carbon-fibre hull and superstructure is not only lighter than steel, but also comparable for fire resistance and ballistic properties, and superior to steel for vulnerability to blast and underwater explosions. In terms of life cycle costs, the carbon-fibre composite is entirely superior to steel and aluminium for fatigue. And the superior corrosion resistance reduces the platform lifecycle costs even further.

Stealth...

It is in the realm of stealth that Visby-class corvette really comes to the fore. Designed in accordance with Saab's stealth philosophy, taking an integrated design approach to signature reduction. Visby-class corvette leads the world in naval stealth reduction across the full signature spectrum, including radar, infrared, acoustic and magnetic design and more than 100 years' of experience.

...and speed

The vessel is equipped with a combined diesel or gas (CODOG) turbine arrangement for high speeds and two diesel engines for low-speed. The engines are connected to two gearboxes, driving two waterjet propulsors.

The diesels sustain the vessel at 15 knots, while the turbines kick in when she has to do 35 knots or better.



Technical specifications

Visby-class corvette

Length over all	72.7 m
Length between perpendiculars	61.5 m
Beam, max	10.4 m
Draught at full displacement	2.4 m
Displacement, fully equipped	650 tons
Speed at full displacement	35+ knots
Complement	43 persons

Mine countermeasure vessels



Efficient MCM vessels

Saab has decades of experience in Mine Countermeasure Vessels (MCMVs) and associated systems. MCMV 47 of the Swedish Landsort and Koster-class, as well as the Singaporean Bedok class, are well-proven around the world.

Main features of MCMV:

- Made of composite/glass fibre reinforced plastic (GRP) sandwich material, which has many benefits to offer, including that it is entirely non-magnetic.
- Equipped for mine hunting and mechanical minesweeping. Operates remotely controlled (ROV) or autonomous (AUV) systems for mine clearance. Can be fitted with any toolbox for MCM-operations.
- A versatile vessel that from the outset has been designed for easy adaptation to meet the varying demands of different customers.

The role of the Swedish Koster-class is primarily mine hunting. Its secondary role is minesweeping. Unlike single-role mine hunters, MCMV 47 Koster-class (originally Landsort-class) was conceived as a multi-purpose vessel, able to perform various mine warfare tasks and also to engage in anti-submarine warfare (ASW).

The Koster-class design is well-proven and extensively verified, with operational experience gained from a multitude of MCM operations, including live mines and underwater explosives. Seven ships of this class have been delivered to the Royal Swedish Navy, and a further four to the Republic of Singapore Navy.

MCMV 52 enhanced Koster-class

MCMV 52 enhanced Koster-class is based on the existing and well-proven MCMV 47 Koster-class, which is currently in operation with the Royal Swedish Navy. This enhanced version has been engineered to meet more demanding customer requirements.



The main enhancements on MCMV 52 Koster-class include extending the Length Overall (LOA) by 5 m to 52.5 m. This creates more space for crew and systems, and improves sea-keeping and ensures a growth margin for the future. MCMV 52 Koster-class will keep the basic hull lines from the proven MCMV 47 Koster-class.

Requirements

Due to the wide variety of mine warfare missions, many specific requirements have been taken into account in the design of the MCMV 47 Koster-class and MCMV 52 enchanced Koster-class.

Some of these requirements are:

- High resistance to underwater explosion shocks
- Low signatures
- Excellent manoeuvrability
- Full nuclear, biological and chemical (NBC) protection
- Electromagnetic compatibility (EMC)
- Spacious accommodation and ample supplies for extended missions

Technical specifications

	MCMV 47	MCMV 52
Length overall	47.5 m	52.5 m
Beam	9.6 m	10. 2 m
Draught	2.3 m	2.4 m
Displacement	400 tonnes	550 tonnes
Speed	15 knots	> 14 knots
Hull	GRP sandwich	GRP sandwich
Main engines	Four 300 kW diesels	Four diesels
Propellers	Two Voith cycloid propellers	Two Voith cycloid propellers
Armament	40 mm gun	40 mm gun
Complement	29	Up to 51

Special Purpose Ship

Optimised for mission types such as signal intelligence or hydrographic survey

As a crucial asset in the naval domain, modern signal intelligence ships play a significant role in maintaining maritime security and safeguarding global trade routes.



Saab's **Special Purpose Ship** (SPS) in signal intelligence configuration is designed to gather, interpret, and disseminate valuable information about potential threats, ensuring the safety of both civilian and military maritime traffic.

Equipped with state-of-the-art technology, the SPS can intercept and analyse various types of radio signals, including satellite communications, radar emissions, and electronic messages. This enables navies to detect and track potential adversaries, monitor maritime activities, and identify illicit cargo movements.

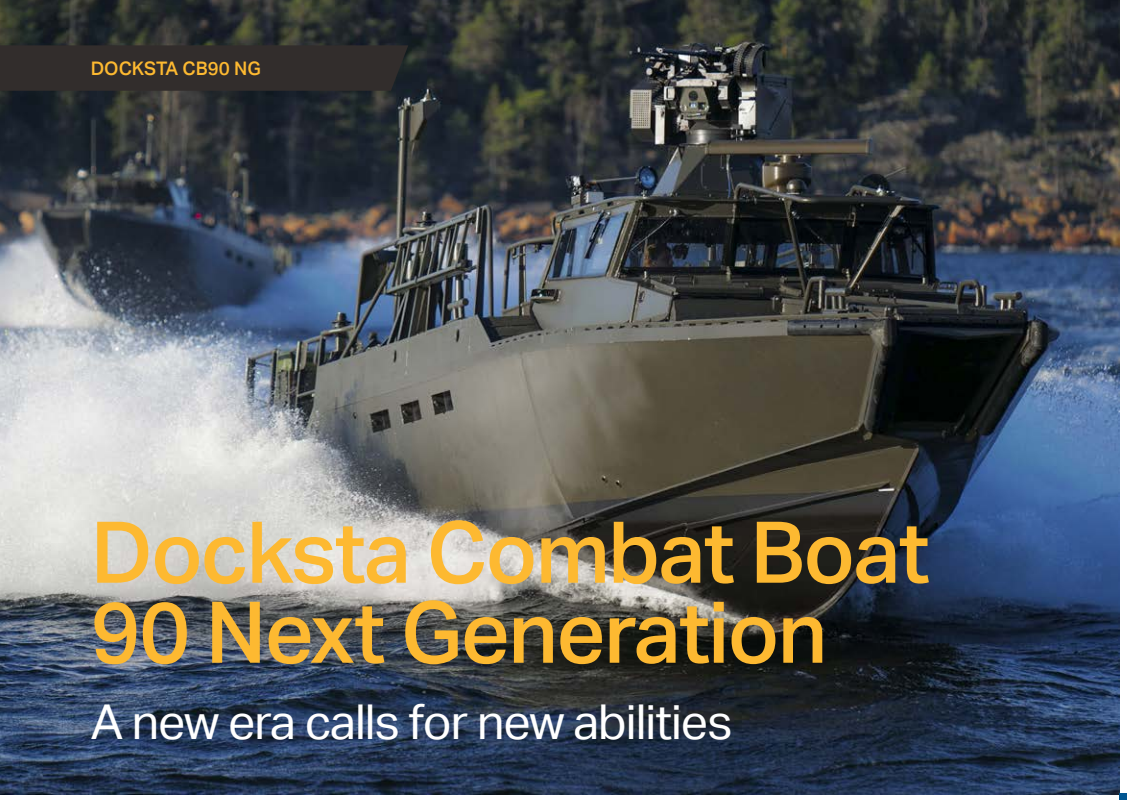
One of the key features of the SPS in signal intelligence configuration is its advanced communication systems which allows it to share intelligence with other naval units, helping to coordinate a unified response to potential threats. By integrating various sensors, the SPS can efficiently gather data, analyse it and quickly adapt to changing tactical scenarios.

The SPS can also be configured as a platform for hydrographic operations in order to explore and map the ocean floor, gather vital information on the depths and features of the seabed. Equipped with cutting-edge sonar and surveying equipment, a hydrographic ship supports the creation and maintenance of accurate nautical charts, essential for safe maritime navigation.

Saab has delivered the SPS in the signal intelligence configuration to the Swedish Navy (HMS Artemis) and two more are currently under construction for the Polish Navy.

The design of the SPS is optimised for special mission types such as signal intelligence or hydrographic survey:

- Size and seakeeping performance
- Long endurance and range
- Maneuverability in slow speed with DP functionality
- Stern deck area for different type of deployable wet sensors
- Large area on top-side for antennas
- Large operation area for consoles and crew to analyse data
- Specially designed electric propulsion and electrical system to reduce interference with sensitive sensors (effective EMC environment)
- Spacious accommodation area and high comfort



Docksta Combat Boat 90 Next Generation

A new era calls for new abilities

The fast and strong Next Generation Combat Boat

With more than 250 boats operating worldwide, CB90 has been a success story since the first boat was commissioned. A new model of the proven concept has been launched, based on the legacy of Docksta: CB90 Next Generation. The fast, all-aluminium CB90 NG can effortlessly carry multiple troops and cargo, in shallow or open waters, whilst maintaining incredible speeds and manoeuvrability.

This is a brand-new boat, equipped with a lot more than its predecessors, such as improved speed, manoeuvrability, attack power and surveillance capabilities. The first boats of the new model have been delivered to the Swedish Navy with the designation Docksta CB90 NG.

Development based on a proven design and operational success

The fast, all-aluminum Docksta CB90 NG can effortlessly carry troops and cargo, in shallow or open waters, whilst maintaining incredible speeds and maneuverability. The craft offers ballistic protection thanks to light weight polyethylene lining and ballistic protected safety glass. The CB90 NG is also fitted with CBRN protection utilising an integrated filter station and a system that keeps the entire vessel pressurised during CBRN operation.

The new generation CB90 makes up a robust, integrated weapons and sensor platform. Due to the improvements made, the craft can carry more payload and therefore offers a wider range of integrated weapons and sensors, such as smaller missile systems, and remote weapon stations like Saab Trackfire. With a versatile and tough interior, combined with a strong bow ramp, the craft ensures swift deployment onto unprepared beaches.

Docksta CB90 NG is based on a proven design and operational success, and is transportable by land, air or other ships. Perfected from a basic model, additional applications include marine police, fire fighter, airport rescue, search and rescue, and environment control.

Key features of the new model:

- Lower life cycle cost
- Enablement of wider range of weapons to integrate

Over 250 units in service with:

- US Navy
- Mexican Navy
- Swedish Navy
- Hellenic Navy (Greek) Coast Guard
- Norwegian Navy
- Peruvian Coast Guard
- Malaysian Navy



Technical specifications

Displacement	
Light	18 tons
Max	24, 5 tons
Measurements	
Total length	16,3 m
Length hull	14,9 m
Beam	3,8 m
Draught	0,9 m
Speed and range	
Max speed with max load	45 knots
Cruise speed at sea state 1 or less	38 knots
Range at cruise speed	300 NM
Propulsion	
Engines	2 x 900 hp
Water jet	2 x Mix flow

Interceptor craft

Docksta IC 20M

Saab has the experience of developing and serially producing hundreds of advanced, high-speed vessels with utmost diligence towards sustainability, the environment and energy efficiency.
The interceptor is a dual-use vessel with exquisite capabilities for both military and civil purposes.
Our crafts are designed, built and equipped to meet class regulations and to operate worldwide.



The fast and quiet variable vessel

The all-welded aluminium Docksta IC 20M is incredibly versatile, with multiple layouts, such as patrol, troop transport, hybrid, SSRS and ambulance. The craft offers 6 g acceleration and sea state 4 without speed reduction.

Sound is minimised with a 63 dB(A) noise level in the wheelhouse and 71 dB(A) in the transport room at 40 knots, unique in patrol boats of this size. The stability, robustness and size makes it suitable to carry a wider range of various types of weapon systems, sensors and equipment.

Docksta IC 20M can be offered as a landing craft with a combat boat type bow ramp or as a patrol craft with a variety of interior arrangements including crew quarters for up to 6/8 personnel. With main engines of 2 x 1400 kW for sprint speed in excess of 50 knots can be achieved.

Technical specifications

Docksta IC 20M

Length, OA	19.95 m
Beam	4.63 m
Draught	1.2 m
Displacement	36 tons
Engines	2x1100–1900 hp
Cruising speed	40 knots
Sprint speed	50+ knots
Cruising range	300 NM

Interceptor craft

Docksta IC 16M

Saab has the experience of developing and serially producing hundreds of advanced, high-speed vessels with utmost diligence towards sustainability, the environment and energy efficiency. The interceptor is a dual-use vessel with exquisite capabilities for both military and civil purposes. Our crafts are designed, built and equipped to meet class regulations and to operate worldwide.



The proficiently designed patroller

The IC16M all-aluminium interceptor craft, developed from the CB90 with Swedish Navy support, has low resistance despite carrying impressive loads, including many troops and weapons.

The sound-insulated wheelhouse offers excellent visibility around the horizon, and there is space for comfortable accommodation to maximise endurance, especially during longer missions.

The combination of low radar profile, extreme speed and manoeuvrability create a powerful platform for police/security operations.

The crafts low draft, together with a V-shaped hull, provides outstanding performance in shallow waters as well as good sea-keeping characteristics in open seas. With main engines of up to 2 x 1470 kW, sprint speeds in excess of 50 knots can be achieved.

Technical specifications

Docksta IC 16M

Length, OA	17.2 m
Beam	3.8 m
Draught	1 m
Displacement	20 tons
Engines	2x800–1200 hp
Cruising speed	38 knots
Sprint speed	50 knots
Cruising range	400 NM

Saab Versatile Warship Design (Basic Design)

Creating a flexible and future-proof vessel requires both extensive experience and the ability to innovate. Saab has a fundamental knowledge base from over 330 years of ship-building. In combination with new technology from collaborations with the academy and the Royal Swedish Navy among others, we ensure that our customers receive a design that combines a multitude of requirements.
In short, we are world leaders in basic design for advanced surface combat vessels.

Saab Versatile Warship Design includes all design phases up to and including Critical Design Review (SDR, PDR, CDR). We also support in technical procurement of long lead items, and all design work is approved by the classification society chosen by the customer. This creates the prerequisites for a successful, powerful and flexible naval ship.

Creating an efficient naval ship is a significant compromise. Operating in both archipelagos and at high seas requires good characteristics such as speed, stability, and fuel consumption.

The environment on board must be adapted for the crew to be able to live crowded and perform advanced tasks for longer periods. The ship must also be equipped for various missions such as firing torpedoes and missiles, all while being difficult to detect and resistant to enemy mines and attacks.

As a designer and shipbuilder at Saab, one must master a wide range of areas to deliver a world-class ship or submarine. The ability to compile all the requirements and then create comprehensive drawings and descriptions is called "Basic design". This is where the ship's performance and capabilities are specified through drawings and technical descriptions.

Often basic design, detailed design, and construction is divided amongst specialists in their respective areas. Saab has extensive experience in all these areas but based on the customer's requirements and our own experience, we choose the best approach to complete the project.

Products which include Saab Versatile Warship Design:

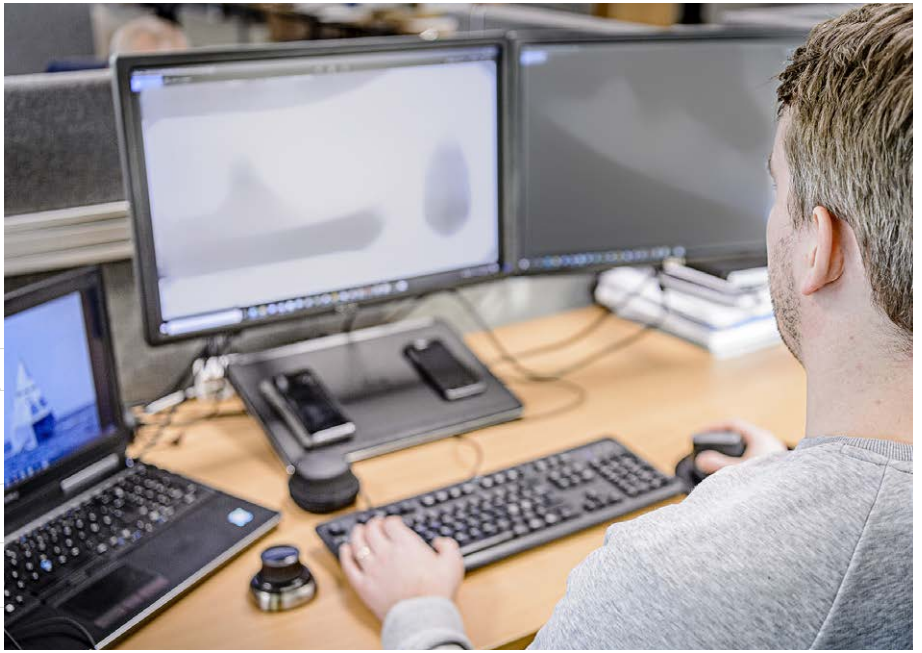
The Swedish Visby Class

The Swedish Visby corvettes were launched in the early 2000s. Despite being more than 20 years old, they are still unique and world-leading in many aspects of their design. In addition to their low signature in stealth and low detectability, they are extremely versatile and flexible. Five were built, inspiring entirely new types of ships around the world.

They are developed to perform a variety of tasks, such as surveillance and targeting surface targets with missiles and torpedoes. In addition, the corvettes can also search for and neutralize mines, submarines and carry helicopters onboard. All this in one of the most complex maritime environments with tens of thousands of islands, varying salinity and fluctuating temperatures: the Baltic Sea.

Independence Class Littoral Mission Vessel (LMV) for Singapore

Through close collaboration with the Singaporean customer and the shipyard, Saabs engineers created a hybrid-construction, a basic design for a vessel with a steel hull and a composite superstructure. This provided the best of both worlds, cost-effectiveness in construction, high performance and the potential for a wide range of capabilities.



Detailed construction was carried out at the shipyard in Singapore, including the construction of the steel hull. Saab performed detailed design and built and delivered the composite superstructures and it was all assembled in Singapore. The first of eight Independence Class vessels was launched in 2015.

Multi-Role Combat Vessel – Larger, more powerful, and flexible for Singapore

Once again, in 2021, Saab received the trusted task to carry out the basic design for a new class of vessels for Singapore. This time it involved a larger vessel, essentially a frigate, well over 100 meters in length and with a displacement between 5,000 to 10,000 tons.

A total of six vessels are planned, the first one to be operational around 2030.

In addition to traditional weapon systems the vessels will also be able to serve as a command and control ship for unmanned vehicles, able to operate in the air, on the sea, and below the surface.

The Swedish Luleå Class

As a complement to the Visby Class, Saab will develop the Luleå Class surface combatant in close collaboration with FMV, Swedish Navy and partners. Anti-Air Warfare will be one of the main capabilities of the new ships, as well as Anti-Surface and Anti-Subsurface Warfare. One of the most important design features is to create flexibility for the future. The Luleå will be designed and prepared for future capabilities and technical evolution through her whole life cycle.

RBS15 Gungnir

Surface-to-surface missile

The key component of the RBS15 Gungnir solution, the RBS15 Mk4 missile offers the capabilities of the future. It can be integrated with ships, trucks and aircraft to engage targets at sea or on land. Designed to dominate the littoral environment, the missile can also operate effectively in blue waters.

The RBS15 Gungnir missile is jointly produced by Saab and Diehl Defence. The result of a continuous cycle of research and development. it offers industry-leading capabilities. These include a longer range than ever before. improved all-weather operation. an extremely flexible trajectory and enhanced defence penetration and electronic protection.

Saab customers also benefit from through-life support and the ability to maintain full national control of RBS15 Mk4. The missile can also be adapted to specific needs and continuously upgraded to ensure that it is always on target – no matter what the future holds.

Key features

- Future-ready anti-surface missile solution
- Based on continuous innovation
- Industry-leading capabilities
- Backwards compatibility
- Possibility to upgrade and update
- Through-life support at any desired level

Operational advantages

- Range of over 300 km
- State-of-the-art all-weather capability
- Improved radar target seeker
- Newcomposite airframe
- Over-the-horizon targeting
- Sea-state adapted sea skimming
- Decision support
- Easily integrates with ships, trucks and aircraft – pre-integrated with Gripen E
- Multi-target-anti-ship and land attack
- Data link capable
- New smart logistics concepts
- Highly accurate and robust navigation with INS and anti-jam GPS
- Prepared for additional future enhancements
- Continuous upgrades to stay at the cutting edge of capability





Specifications

RBS15 Mk4

Length	4.35 m
Wing span	1.40 m
Fuselage diameter	0.5 m
Weight (in flight)	650 kg

RBS15 Mk3

Surface-to-surface missile

The RBS15 Mk3 is Saab's latest surface-to-surface missile (SSM) system, incorporating cutting-edge technology. It is a fire-and-forget, subsonic cruise type missile with all-weather capability.

RBS15 Mk3 can be launched from ships and trucks and is intended for anti-ship missions and land strikes.

With its long-range, unrivalled flexibility and high speeds, it provides a tactical advantage to naval forces.

It can be launched from naval vessels and trucks in scenarios ranging from blue water to littorals, as well as in land attack missions, making it perfect as the main anti-surface armament.

Some of its key attributes include:

- Large warhead
- Long range
- Extremely flexible trajectory
- Advanced target seeker with all-weather capability
- High defence penetration

German navy

As a leading member of NATO, Germany puts a premium on defence, and requires sophisticated systems for its Navy. After thoroughly evaluating a range of systems, the country's Navy selected RBS15 Mk3.

The RBS15 Mk3 has been delivered to Germany and Poland, while production is ongoing for Sweden and several other countries.

The RBS15 Mk3 is designed with sustainable and affordable ownership in mind. Saab will support the missile system throughout its 30 year service life.

Saab offers flexible support solutions including in-country support for customer nations.
The system is jointly produced and marketed by Saab, Sweden and Diehl BGT Defence, Germany.



Lightweight torpedo

Command littoral waters

Saab's Lightweight Torpedo (SLWT) is an anti-submarine warfare solution that gives you total control within the challenging littoral environment.



For many years, **SLWT** has been helping nations to defend their waters. As a result, it offers best-in-class capabilities today, whilst also being ready for tomorrow.

Originally developed for the Swedish Navy, the electrically propelled solution incorporates a fully digital homing system, ensuring ultimate impact.

Operational in any conditions

SLWT operates equally well in both shallow and blue water, as well as under cold, warm or brackish conditions. State-of-the-art design ensures optimal performance in difficult hydroacoustic situations, with near-neutral buoyancy enabling advanced manoeuvrability and low speeds. The torpedo also has minimal undershoot to allow launches in shallow waters.

Both a fire-and-forget and wire-guided torpedo, SLWT enables the operator to manually navigate narrow passages and complex terrain when required. If the wire breaks, the torpedo can continue its mission, or abort and swim to the seabed. The torpedo can be launched from surface ships, helicopters and submarines, operating in both anti-surface and antisubmarine roles.

In-service support

Saab works closely with customers worldwide to secure their operational capabilities through our well-established and effective in-service support solutions. Our flexible and scalable range of offerings includes:

- Maintenance and repair
- Supply and logistics
- Operational and technical support
- Training
- Upgrades and modifications
- Obsolescence management

System specifications

SLWT

Length	2,850 mm
Diameter	400 mm
Weight approx.	340 kg
Speed	10- to 40+ kts
Endurance	20+ km, 1+ hrs
Depth	300+ m
Homing system	Active/passive, fully digital sonar
Proximity fuse	Multi-beam sonar
Propulsion	Pumpjet (ducted rotor/stator)
Energy	Lithium-based rechargeable battery
Warhead	IM compliant, omnidirectional, PBX
Communication	Galvanic wire/optic fibre

Trackfire RWS

Remotely operated weapon station with pinpoint accuracy and C-UAS capabilities

Designed for standalone use or integration as part of a Combat Management System for all types of naval vessels, this next-generation, compact, fully stabilised Remote Weapon Station (RWS) delivers cutting-edge performance. The new Trackfire ARES (Aerial Response) RWS counters threats not only on land and water but also in the air through its effective C-UAS capability.

Stabilised Independent Line of Sight (SILOS)

Trackfire's SILOS configuration places the sensor module drives within the Director Unit structure. The Sensor Module (SM) is independently stabilised (not just decoupled), enabling continuous lasing of the target throughout the engagement sequence.

Combined with buffered weapon cradles and a high degree of overall system stability, the SILOS configuration ensures precise targeting and accurate effects in 3D (i.e., surface and air targets) with full control and continuous observation in the Gunner's Display (GD) during firing. Additionally, the system allows the weapon(s) to be independently elevated to a non-threatening position while maintaining full control of the Sensor Module.



Trackfire ARES
Remote Weapon Station.

Highly effective C-UAS capability

The new Trackfire ARES RWS offers highly effective C-UAS capabilities, protecting the ship and its operators from aerial assaults. The Trackfire ARES RWS is equipped with a M230LF 30 mm Bushmaster Chain Gun as the primary gun.

Operator support

The geoposition tracker and moving target tracking functions automatically compensate for the ship's positional changes during manual and automatic target tracking of stationary and moving targets. Saab's proven Video Tracker (used by numerous navies worldwide) and Trackfire's Fire Control Computer enable operators to automatically and accurately track and engage targets, regardless of their motion. The Automatic Roll Compensation (ARC) continuously updates the ballistic solution for platform roll movements, ensuring the highest hit probability. ARC also stabilises the sensor image, reducing response times and improving operator comfort.

Human Machine Interface (HMI)

The HMI follows a 'One Button, One Function' philosophy. Comprising a Fire Control Panel (FCP), Control Handle (CH), and Gunner's Display (GD), the HMI is simple, ergonomic, and multifunctional.



Multi-weapon capability

Trackfire's dual-weapon capability allows operators to choose between two different effects (main or co-axial weapon) when engaging a target. Reconfiguring the system for various weapon combinations is quick and easy.

- 30 mm M230LF Bushmaster Chain Gun (Trackfire ARES, C-UAS)
- 12.7 mm M2 Heavy Machine Gun (HMG)
- 40 mm Automatic Grenade Launcher, such as the Mk19 or Heckler & Koch Grenade Machine Gun (H&K GMG)
- Saab missile system RBS 70

In the co-axial position, Trackfire supports the 7.62 mm MAG-58 machine gun.

Combat Management System (CMS) interface

Trackfire can receive designations from an interfaced CMS. Once the operator accepts the CMS designations, Trackfire is automatically directed toward the target using the provided bearing and range. The target is then automatically tracked with cyclic bearing and range updates from the CMS. The operator can also send the current Trackfire Line of Sight (LOS) bearing and selected range back to the CMS.

Additionally, a meteorological sensor can be interfaced with Trackfire via the CMS, allowing automatic compensation for wind conditions, temperature etc., in the ballistic solution, without requiring manual input from the operator.

TactiCall ICS

Integrated Communications System

Don't let different standards get in the way of your communication needs. TactiCall Integrated Communications System (ICS) enables you to communicate across all known radio-communication technologies, civil or military, regardless of vessel type and operational duties.

Complete mission support

TactiCall supports all elements of internal and external communication, including voice and data transmission.

The operator can select the right communication net to support the vessel and complete the mission, with whatever resources are available and in any environment.

The system supports remote control operations enabling all communication tasks to be performed from a single unit – the subscriber station.

Intuitive user interface

TactiCall includes a unique operator position – the subscriber station – for voice communication, chatter monitoring, video monitoring and equipment remote control.The role based TactiCall user terminals can handle multi-level secure internal and external communications, multi-level secure telephony, PAGA control and remote control of equipment's.



Flexibility

Easy and direct access to key functionalities is essential when operational engagement times are short. TactiCall is characterised by an intuitive user interface designed to support an easy overview of the situation, enabling personnel to quickly carry out their duties.

Capability

TactiCall is fully scalable, making it the ideal choice for all vessel classes. The system has been put together based on customer requirements and is scalable to fit a variety of communication needs, ranging from capital naval vessels to civilian-operated coastguard patrol vessels.

TactiCall User Terminals

TactiCall ICS includes a wide range of user terminals and hardware with different communication and environmental capabilities. The touch key versions are typically used indoor in operational rooms and multi-function consoles, while the soft key versions are used outdoor and under rugged environmental conditions. Furthermore, TactiCall user terminal solution provides mobile user terminals for crew mobility on the entire ship. The mobile devices are based on rugged smartphone technology and advanced security for multi-level secure communication with access to both internal and external communications simultaneously.





TactiCall

Multi-level secure communication

The TactiCall Multi-level security is built to facilitate the chain of command within armed forces for joint operations and supports the operators' ability to effectively manage operational duties. With TactiCall the operator can easily monitor and share information across organisations while maintaining strict multi-level security controls.

Multi-level – Security

The set-up can be expanded to include multiple security domains. These could be, UNCLASSIFIED, RESTRICTED and SECRET in a simple but fully secure system as the user terminals do not need to be directly hardwired with the individual networks simplifying red/black and TEMPEST installations.

Approved & Certified

Multi-level secure communication based on COTS hardware and Common Criteria EAL5+ certified TactiGuard security software.

Customised & operationalised

The unique separation mechanism in the certified TactiGuard security products enables customisation of HMI, workflows and environmental requirements to meet customers' changing needs without requiring expensive and time consuming security re-certification work.



Cross domain solutions

Saab's certified TactiGuard cross domain solutions is used to integrate classified Combat Systems with lower classified sensor/effector systems for secure import of data and configurations. The ships' classified enclaves are minimised and unclassified effector, sensor, communication and navigation systems are kept at lower classification level and thereby easier to maintain with lower security risks.

TactiGuard XD

– Cross Domain Solution

- Share information across organisation multiple security domains
- Common Criteria evaluation approval by National Security Authority
- Support of customer protocols and adaptations without Common Criteria re-evaluation
- Includes Common Criteria approved Firewall & Intrusion Detection System

TactiGuard VSI

– Voice Stream Interceptor

- Provides foundation for TactiCall Secure Voice in various TactiCall operator positions
- Common Criteria EAL5+ certified and Saab patented
- Uses TactiGuard OS as secure underlying platform



ICS Secure Voice & Data Naval communication solution

TactiCall ICS is a fully IP based and distributed communication solution using standard COTS and MOTS. The generic and scalable architecture is suitable for both new build and upgrade programs from submarines to surface vessels.

The highly integrated communication system provides voice and data, internal and external communication including additional services such as Broadcast and Alarm, Telephony, Intercom, Entertainment and CCTV.

The TactiCall management system is a core element of the solution and provides automated communication management capabilities for communication setup, mission planning and control. The web based management system provides operator with an overview, control and status of equipment and communication chains. For fail-safe naval operations, the system even allows for test of communication chains prior to use.

Naval operation

- Integration of legacy systems and 3rd party products into a fully operational solution
- Common Criteria EAL5+ certified for multi-level secure communication
- Scalable, fail-safe and redundant system architecture
- Fully IP based communication system based on standard MOTS/COTS products
- Modern user terminal with intuitive HMI for fast and efficient operations
- Centralised management of terminals, IP network, crypto, modems, radios and RF distribution.

Sirius Compact

Compact passive surveillance for tactical applications

Sirius Compact is a family of modular and scalable passive Electronic Warfare (EW) sensors, providing a true force-multiplier by enhancing situational awareness through silent detection, classification and prioritisation of radar and datalink emissions.





Sirius Compact is a small form factor, light-weight Radar-Electronic Support Measures (R-ESM) sensor that can be rapidly deployed and connected in a network to support tactical operations. Autonomous operation enables assimilation and compilation of intelligence information without storing sensitive data in the sensor.

Sirius Compact enables tactical Electronic Warfare across all operational levels, adding a higher level of confidence to situational awareness for decision support.

Scalable and agile

Sirius Compact is an installation and datalink agnostic sensor which can be mounted on a multitude of platforms including drones, vessels, vehicles, masts or man-portable deployments.



Typical applications

- Complement to multi-sensor systems for Air Defence, Coastal and Border Surveillance etc.
- Combat Boat, Support Vessels and Coastal Patrol Vessels
- Unmanned Aerial Vehicle and Unmanned Surface Vessel
- Special Operations

Features

- Tactical Electronic Support Measures (ESM)
- High precision Direction Finding (DF)
- Geo-location by triangulation
- Real-time emitter classification and prioritisation
- Signal recording for ELINT support
- Interfaces to CMS
- Intuitive User Interface
- Multi-domain: Air, Land & Sea

Technical data

- Frequency coverage: 1-18 GHz*
- Azimuth coverage: 360°
- DF accuracy: < 2° RMS
- Interfaces: Ethernet, 14-32 VDC
- Height: 35-48 cm* / Diameter: 15-17 cm*
- Weight: 3.3-5.8 kg*
- Power: 60 W (typical)
- Positioning: Integrated IMU/GNSS

**) depending on variant*

Standard accessories

- External GNSS antenna
- Ruggedised computers
- Battery packs
- Platform interface kits
- Transport cases and backpacks
- Signature management suite

USME ESM/ELINT Systems

For surface and subsurface vessels

The ESM family consists of a range of compact, high-performance tactical ESM and ELINT systems which meet today's stringent operational EW requirements. Different configurations, suitable for installation on surface and sub-surface platforms, are available.



Picture courtesy of ThyssenKrupp Marine Systems GmbH

Our **ESM systems** maintain your operational advantage, even in the most cluttered signal environments due to the digital architecture with high sensitivity and precision parameter extraction.

Our 4th generation USME Radar ESM/ELINT family features a wideband digital architecture with accurate parameter analysis, direction-finding and classification. The highly integrated receivers provide extensive RF band coverage. The dual polarised reception ensures exceptional probability of intercept (POI), even in the presence of an extremely dense commercial communication signal environment. The system is capable of interception of modern Radar signals that are agile, and that employ various LPI techniques.

Classification is performed using an advanced Signal Processing Chain, that provides accurate classification and platform association using imported data from the National Database, and from a local dynamic library capability, operating in parallel. Allocated priority to matched emitters, supports automatic hand-off to Combat Management and countermeasure systems.

Operation is fully autonomous, or operator-assisted, with HMI integrated to multiple multi-function consoles, wherekey parameters, with classification are automatically extracted for viewing, recording, and track hand-off. ELINT modes allow a deeper level of signal extraction while operational, or as post mission, due to the extensive recording capability.

The USME together with its support products enables the user complete control of the EW management process, from library compilation, detection and classification through to advanced post-mission analysis and dealing with all maintenance activities. Options include the addition of either Millimetre wave, or Low band capability, or both.

Key operational advantages

- Fully digital architecture supports operation in cluttered signal environments
- Wideband architecture and dual polarised reception provide exceptional POI
- High sensitivity provides early threat interception
- Flexible interfacing concept facilitates interoperability to the platform
- Low Size Weight & Power (SWaP)

Features

- High probability of interception
- High sensitivity
- Wide operating frequency range
- Fast reaction time
- Seamless platform interfacing
- Accurate threat classification & identification
- Extensive Built-In Test capability
- Raw recording, with playback functions





NLWS

Naval laser warning system

The Naval Laser Warning system enhances ships survivability against laser weapons, due to the fast interception and classification provided, with range advantage against most threats.

Our Naval Laser Warning Systems enhances the capability of fighting ships by providing real-time situational awareness of laser weapons. The NLWS has the capability to automatically intercept and analyse Laser transmissions, extract key parameters and provide classification of the emitter, with association to the most probable platform.

The NLWS with its support products enables the user complete control of the EW management process, from library compilation, detection and classification and dealing with all maintenance activities.

Threat detection and classification

The NLWS automatically intercepts, analyses and classifies all types of threat lasers.

Operation

System operation, whether in a stand-alone, CMS, or as part of an integrated EW solution, is both simple and intuitive. The system can operate in either a fully automatic mode, or attended by an operator for intercept analysis.

Platform integration

The NLWS is fully integrated with the Saab USME family of Radar ESM systems. Seamless integration into platform Combat Management System (CMS), and Countermeasure systems, such as with the Rheinmetall's MASS® System. Extensive Cyber hardening has been incorporated into the NLWS.

Platform coverage

Hemispherical platform coverage is achieved by placement of the optimum number of sensors on the platform with consideration of the platform size and topside design complexity.

Threat library

Simplified Threat Library Management allows for easy preparation of mission files and seamless transfer of the files to the Laser ESM system.









Technical specifications

NLWS

Wavelength coverage	0.53 µm to 1.7 µm
AOA (Angle of Arrival) accuracy	Typically 5° RMS
Spatial coverage	Full hemispherical

CRS-Naval and CRS-Submarine

Radio monitoring

CRS-Naval (Surface) and CRS-Submarine are radio monitoring solutions for naval applications that include direction finding and geo-location capabilities.

CRS capabilities cover the LF/MF/HF and VHF/UHF/SHF ranges over the entire azimuth and to a wide elevation. It achieves this by searching, direction finding, geo-locating, intercepting, recording, analysing, classifying and identifying radio signals in the selected frequency range.

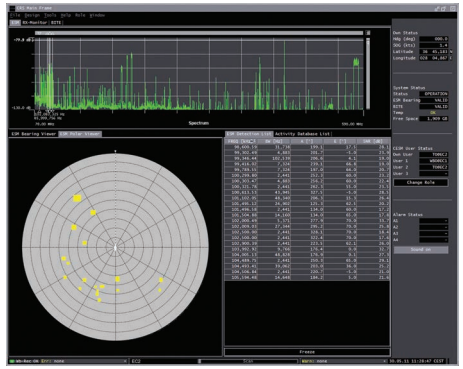
C-ESM/COMINT

CRS offers functions for automated signal analysis and recording for both broadband and narrowband signals. The system is highly automated, but can also be operated interactively. Results are visualised as spectra or on a polar display (radar screen), with the individual results shown in lists. Operators can select the emissions from these lists and, if required, follow-up by means of a tracking system. The surveillance and monitoring results are presented to the operator as well as the alarms raised by the system.

Features

- Radio monitoring and direction finding in LF/MF/HF/VHF/UHF/SHF
- Wideband technology
- Focus on automation: direction finding, signal interception, demodulation, decoding, production, emitter tracking
- Elaborated role concept (optional)
- Map display
- Comprehensive online and offline analysis
- Modular and scalable system design
- Seamlessly integrated in the SIRIUS SIGINT and ESM product







Picture courtesy of ThyssenKrupp Marine Systems GmbH

Rugged vehicle electronics

Another level of rugged

Saab's rugged vehicle electronics equipment does not need external dampening or to be suspended in wires to survive shocks inside a wheeled or tracked vehicle. Bolt it directly to the metal and it will survive, even directly attached to a naval gun thanks to its solid design.

All equipment is prepared for use in the most extreme environmental conditions, including vibration, shock, humidity, moisture, temperature and EMI.

Product suite:

- Rugged Computers
- Rugged Displays
- Rugged Portable Computers
- Rugged accessories
- Rugged Network Swicthes
- Rugged Cameras
- Network Components
- Test & measuring equipment

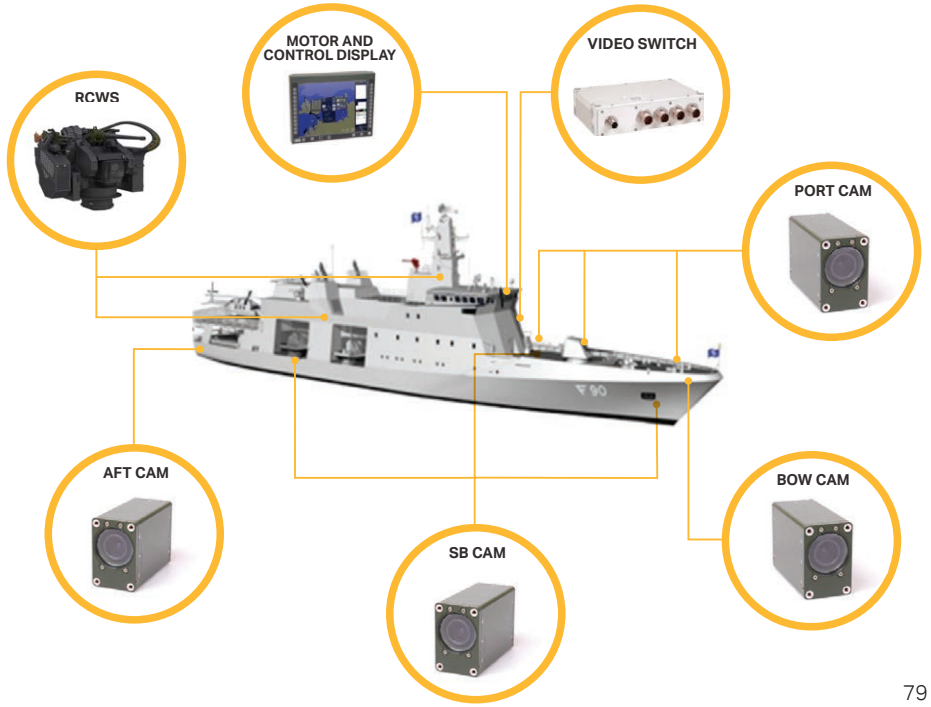
Key features:

- All equipment is prepared for use in the most extreme environmental conditions including vibration, shock, humidity, moisture, temperature and EMI
- Includes a very low latency video system
- No computers needed for video system
- Same network for video and computers





Situational awareness is always essential, especially during a battle at sea.
Without a clear grasp of the tactical situation, a vessel's weapon systems and armour is irrelevant.



AUV62-AT

State-of-the-art training

Supports advanced ASW operator training, onboard sonar and command systems check-ups. It features powerful built-in tools for training, planning and evaluation – capabilities which enable it to perform high end ASW training.

Train as you fight

The AUV62-AT is flexible, adaptable and can operate in several different modes, enabling it to comply with various sets of training scenarios.

It can generate realistic submarine noises and echoes, which are transmitted at a precise target strength.

The payload module of the AUV62-AT includes a transducer tail, which mirrors the physical length of a submarine so as to provide realistic training, including ASW torpedo firing.

The tail incorporates transmitting and receiving sensors, so that training personnel can perform onboard analysis of the location of active sonars or attacking torpedoes.

Capable of deceiving any torpedo homing system, the AUV62-AT system provides forces with a highly qualified tactical training target.

High availability

Training facilities and equipment must comply with the relevant regulations and be highly accessible if they are to provide effective naval mission preparation for ASW forces.

Using submarines for training purposes can be costly and inefficient. In addition, submarines are not always available for use in training exercises, restricting forces' ability to train and plan for future missions.

The system can either be integrated or operate stand-alone. It can be launched and recovered from most platforms and from shore, allowing forces to train in any field, dramatically reducing ramp-up and turnaround times.

Mission planning and different training scenarios can be prepared in advance, and then be downloaded to the vehicle just before launch. Operations change rapidly and environments can be severe, but the AUV62-AT is easy to adapt to get most out of the training, saving time and resources.

In-service support

Saab works closely with customers worldwide to secure their operational capabilities through our well-established and effective in-service support solutions. Our flexible and scalable range of offerings includes:

- Maintenance and repair
- Supply and logistics
- Operational and technical support
- Training
- Upgrades and modifications
- Obsolescence management





Standard system specifications

AUV62-AT

Overall length	4.5 m
Cylindrical module diameter	0.53 m (21 inches)
Total weight in the air	800 kg
Maximum operating depth	300 m
Operating speed range	0-12 knots
Positioning accuracy typically	<± 5 m rel. ground
Programmable Acoustics	in the range of 25Hz-100kHz
Programmable Echo Repeat	in the range of 1 kHz-100 kHz

Double Eagle Family

Double Eagle SAROV and Double Eagle MDS

Efficient tools are essential to containing the threat of mines.
The Double Eagle vehicles detects, classifies and disposes of maritime explosives.



The Double Eagle uses a modular approach to provide flexible systems for MCM applications (Mine Countermeasure, Mine Hunting and Mine Disposal). The tasks of mine reconnaissance and mine disposal demand a multifunctional Remotely Operated Vehicle (ROV). This ROV must be capable of withstanding harsh environments as well as coping with modern mines.

The Double Eagle family consists of Double Eagle SAROV, Double Eagle MDS and Double Eagle MuMNS.



Double Eagle SAROV

The Double Eagle SAROV ROV/AUV hybrid system is capable of conducting MCM missions using a hybrid ROV/AUV vehicle either controlled by tether or autonomously by own navigation using pre-planned missions. The vehicle can either be powered by installed batteries or via tether from the ship.

Combining the features of ROV's and AUV's makes the Double Eagle SAROV a versatile vehicle suitable for a variety of missions such as:

- Rapid Environment Assessment
- Underwater survey
- Mine Detection and Identification
- Mine Disposal

Double Eagle MDS

The Double Eagle Mine Disposal System (MDS) is capable of conducting MCM-missions using an ROV controlled by tether.

The Double Eagle MDS is a versatile vehicle suitable for a MDS missions including:

- Mine Detection and identification
- Mine disposal



Technical specifications

	Double Eagle SAROV	Double Eagle MDS	Double Eagle MuMNS
Dimensions	3.0 x 1.3 x 0.8 m	2.2x1.3x0.5 m	2.7x1.0x0.6 m
Operational depth	300 m	500 m	300 m
Forward speed	0-6 kt	0-6 kt	0-4 kt
Weight in air	730 kg	360 kg	415 kg fully loaded

Double Eagle Family

Double Eagle MuMNS

The Saab MuMNS system delivers a new generation of mine neutralisation and immunisation in a powerful, modular system based on proven Saab technology and Mine Countermeasures (MCM) solutions. It delivers unparalleled operational capability with greater flexibility that significantly improves operational tempo, and reduces the cost of MCM operations and risk to personnel.

MuMNS system

The ROV is highly manoeuvrable with six Degrees of Freedom (DoF), and is equipped with advanced sensors for correct mine identification.

The system may be installed on a range of craft, including Unmanned Surface Vehicles (USVs). System operation may be performed from a remote location at a safe distance from the mine field.

Mine Neutralisation System (MNS)

The ROV may be equipped with up to three MNS charges at a time, including:

- **Pre-filled neutralisation unit**
  Insensitive shaped charge safely assembled in an encapsulated silo.
- **User-filled immunisation unit**
  Qualified charge container in an encapsulated silo. Appropriate explosive material is selected and assembled by the clearance team.
- **Training unit**
  Dummy warhead in an encapsulated training silo, providing an economical, reusable solution for clearance teams to test a full end-to-end mission.

In-service support

Saab works closely with customers worldwide to secure their operational capabilities through our well-established and effective in-service support solutions. Our flexible and scalable range of offerings includes:

- Maintenance and repair
- Supply and logistics
- Operational and technical support
- Training
- Upgrades and modifications
- Obsolescence management



Sabertooth

Powerful and versatile

With deep water capability, long excursion range, advanced AUV functionality and a six degrees of freedom control system, Sabertooth is the perfect example of Saab's thinking edge in action. Available in single and double hull, Sabertooth is a very powerful but lightweight inspection, maintenance and repair (IMR) platform. Its small size, tether-free operation and manoeuvrability ensure easy and safe access inside and around complex structures. This makes it ideal for offshore survey work and autonomous IMR of subsea installations and tunnels.

Operational concept

Autonomous

This mode has behaviour-based architecture, supported by an inertial navigation system and Doppler velocity log.

Features include mission-planning software with possibility for a with the possibility for the customer-intelligent payload to take control, plus our API means that customer/third-party software can become the backseat driver.

Operational assisted

Sabertooth is given step-by-step instructions from an operator over an optical through-water or acoustic communication link. Each step is then verified by video or sonar data and sent back via the through-water communication link.

Manual operation

The vehicle can be operated manually via a fibre-optic tether or an optical through-water communication link. This mode is typically used during the final approach to a docking node or during intervention. If the link is broken, a pre-programmed emergency routine is enabled.

System Overview

The versatile Sabertooth is powered either by battery or via a tether. If used as a subsea resident system, the Sabertooth is housed at the docking unit where its batteries can be re-charged. This unit allows for data to be uploaded to the surface and new instructions to be downloaded.

The vehicle can swim autonomously to the docking unit and remain there 24/7 for more than six months without maintenance, eliminating the cost of surface vessels. This deep-water hovering hybrid AUV/ROV benefits from 360° manoeuvrability with six degrees of freedom, interfaces for sensors and auxiliary equipment. The vehicle also utilises advanced autopilots: heading, depth, altitude, pitch and roll stabilisation, station keeping and vector transitions.

The Sabertooth has the capability for non-invasive self-diagnostics, and includes a fault-tolerant control system. Its remote internet interface can be used as a base for technical support if necessary.

Tooling packages can also be stored in the vicinity and used as required. In ROV mode, a wide range of winches and tethers are available.

In-service support

Saab works closely with customers worldwide to secure their operational capabilities through our well-established and effective in-service support solutions. Our flexible and scalable range of offerings includes:

- Maintenance and repair
- Supply and logistics
- Operational and technical support
- Training
- Upgrades and modifications
- Obsolescence management



Standard system specifications

Sabertooth	Single hull	Double hull
Depth rating	1,200 msw	3,000 msw
Dimensions	3.6 x 0.66 x 0.45 m	4 x 1.35 x 0.67 m
Launch weight	650 kg, max. 800 kg	1,300 kg, max. 2,000 kg
Interfaces	Cameras, sonars, HV tooling/motor	Cameras, sonars, HV tooling/motor
Auto functions	6 DOF, heading, depth, altitude	6 DOF, heading, depth, altitude
Forward speed	5 knots	4 knots
Battery capacity	10 kWh	30 kWh

Commercial
Underwater Systems

With over 1000 vehicle systems delivered across the globe and being the leading supplier to the offshore energy sector, Saab Seaeye has inspired pioneering developments that continue to lead the industry with innovative solutions trusted to perform complex tasks in some of the most challenging environments on the planet.

Many different market sectors deploy these robotic systems in a vast array of demanding tasks in situations where the systems work tirelessly for extended periods in the most challenging conditions.





Seaeye eM1-7

The eM1-7 electric manipulator is an advanced seven function work class manipulator, developed to replace traditional hydraulic manipulators.
It offers significant advantages over hydraulic alternatives including, more precise positioning with force feed-back, increased dexterity and greater reliability all expanding the potential for automation, autonomous and resident applications.

The Seaeye product range


Falcon


Falcon DR


Tiger


Lynx


Cougar XT Compact


Cougar XT



Tasks include observation, inspection, repair and maintenance, diver support, survey, construction and intervention, drill support, salvage support, long tunnel and dam inspection, security, search and rescue operations including submarine rescue, UXO clearance, decommissioning, marine science, archeology and environmental monitoring.

Our extensive range includes:

- Work Class Remotely Operted Vehicles (ROVs)
- Inspection and Observation ROVs
- Autonomous underwater vehicles (AUVs)
- ROV Tooling including an all-electric work class manipulator
- Underwater vehicles for both commercial and military applications


Panther XT Plus


Leopard


eWROV


Sabertooth Single hull


Sabertooth Double hull

GlobalEye

Performance beyond limits

To truly ensure territorial integrity and security in today's complex environments, airborne surveillance is crucial. So too is extended range coupled with the ability to detect low-observable air, sea and ground objects. With the new GlobalEye AEW&C solution, you get it all.

GlobalEye AEW&C provides air, maritime and ground surveillance in a single solution. It combines a powerful new extended range radar with the ultra-long range Global 6000/6500 jet aircraft from Bombardier. A solution that maximises operational performance – both in terms of detection capability and mission endurance – while at the same time offering outstanding crew comfort.

Extended range, enhanced performance

With highly increased detection range and over 11 hours of operational endurance, GlobalEye AEW&C is perfectly suited to fulfil the most demanding operational requirements. Particularly since it has the ability to detect low-observable air targets in heavy clutter and jamming conditions and also can detect and track maritime targets out to the elevated horizon and small jet-ski or RIB sized vessels at very long distances.

One solution, multiple roles

GlobalEye AEW&C is a true multi-role system designed to operate effectively in a wide range of missions – air, maritime and ground surveillance in one single solution.

It can operate in dedicated roles or in a multitude of combined roles and has the ability to instantly switch between these roles – swing-role – at any time during an on-going mission.

Endurance for all missions

The Global 6000/6500 ultra-long-range jet aircraft offers state-of-the-art avionics and combines ideal size for multi role and extended AEW&C with outstanding performance.





Domain capabilities

Air surveillance

- Powerful new Erieye ER (Extended Range) radar to reclaim the detection distance for small and future targets
- Detection and tracking range highly increased
- Designed to work in severe clutter and jamming conditions
- Adaptive AESA radar – energy is focused on areas or targets of interest

Maritime surveillance

- Detects sea targets out to the elevated horizon
- Detects small boats, like jet-skis at long distances
- The unique combination of Erieye ER and maritime surveillance radar allows for detection of objects down to the size of a periscope
- AIS, EOS and ISAR for identifying objects

Ground surveillance

- Detects moving objects through long-range wide area GMTI
- Radar images, weather independent, with a dedicated radar

Mission capability

- Ultra-long range business jet, ideally suited for special missions applications, >11 h endurance
- Excellent airfield performance, 6500 ft, allows the use of smaller airports
- Full Self-Protection Suite
- Ideal working conditions for all crew members

Saab 2000 Erieye AEW&C

In an ongoing operation, every second is vital in order to gain information superiority. Decisions and actions based on real-time information are crucial and demand systems that offer high situation awareness.

The Saab 2000 Erieye AEW&C system provides Airborne Early Warning & Control and the rapid performance required to make the right decisions. It is a true force multiplier that will facilitate the optimisation of your operations.

Erieye is a complete AEW&C system with multi-role and multi-mission capabilities for both military and civil needs.

It gives you the power of a national asset to reinforce territorial integrity and national security.

Proven and continuously developed

It is a proven system, operational since 1996. As the first modern AESA compact AEW&C system, it has constantly evolved through spiral development to be in the top of its segment.

Dynamic detection

Flying at high altitude, Erieye covers a much wider area than a conventional ground-based sensor system does.

The effective surveillance area is over 500,000 sq. km horizontally and over 60,000 ft. vertically. Sea coverage is only limited by the horizon and everything from fighter aircraft, hovering helicopters, cruise missiles and Jet Ski-sized sea targets can be detected and tracked.

The system delivers a reliable flow of precise information, irrespective of atmospheric and clutter conditions.

Compact and cost-effective

The lightweight design makes Erieye ideal for integration on medium-size commuter-type aircraft, like the Saab 2000 turbo prop. A solution that benefits from high availability, low operational costs and a small organisational footprint.





Flexibility through technology

The radar is based on Active Electronically Scanned Array (AESA) technology, enabling the radar energy to be adjusted according to the situation – it can be used over an extensive area or concentrated within a smaller prioritised area. The radar detects and tracks objects quickly with high precision and a high update rate. S-band technology ensures top performance in all weather conditions.

Erieye is a complete AEW&C system that provides capabilities for both military and civilian needs:

- Air Surveillance
- Sea Surveillance
- Intelligence
- Command & Control

Multi-mission capability

Typical mission-types include:

- Air and Sea surveillance including Intelligence
- Airborne Early Warning
- Control of own assets
- Surveillance and control of national borders, assets and economic zones
- Search and Rescue
- Alert warning
- Air policing
- The extensive COM suite secures communication with participating assets and other control centres, on the ground or in the air.



9Airborne MMS

Mission Management System

The maritime domain is an increasingly high-paced and high-technology environment. Ready and accurate access to information regarding both own-unit status and a more widespread situational picture are crucial factors for a force's ability to succeed.

Photo: Gunnar Åkerberg





The 9Airborne Mission Management System (MMS) is a command and control system for all types of platforms and missions. It provides functionality which has been optimised for the airborne domain. The information from primary surveillance radar, IFF, ADS-B, tactical data links, AIS and ESM provides forces with situational awareness. 9Airborne MMS comprises the renowned Track Data Fusion Engine (TDFE) for fusion and correlation of tracks, which further enhances its capabilities.



Photo: Gunnar Åkerberg

9Airborne MMS is a cost effective, interoperable and flexible system.

Saab has adapted the solution for:

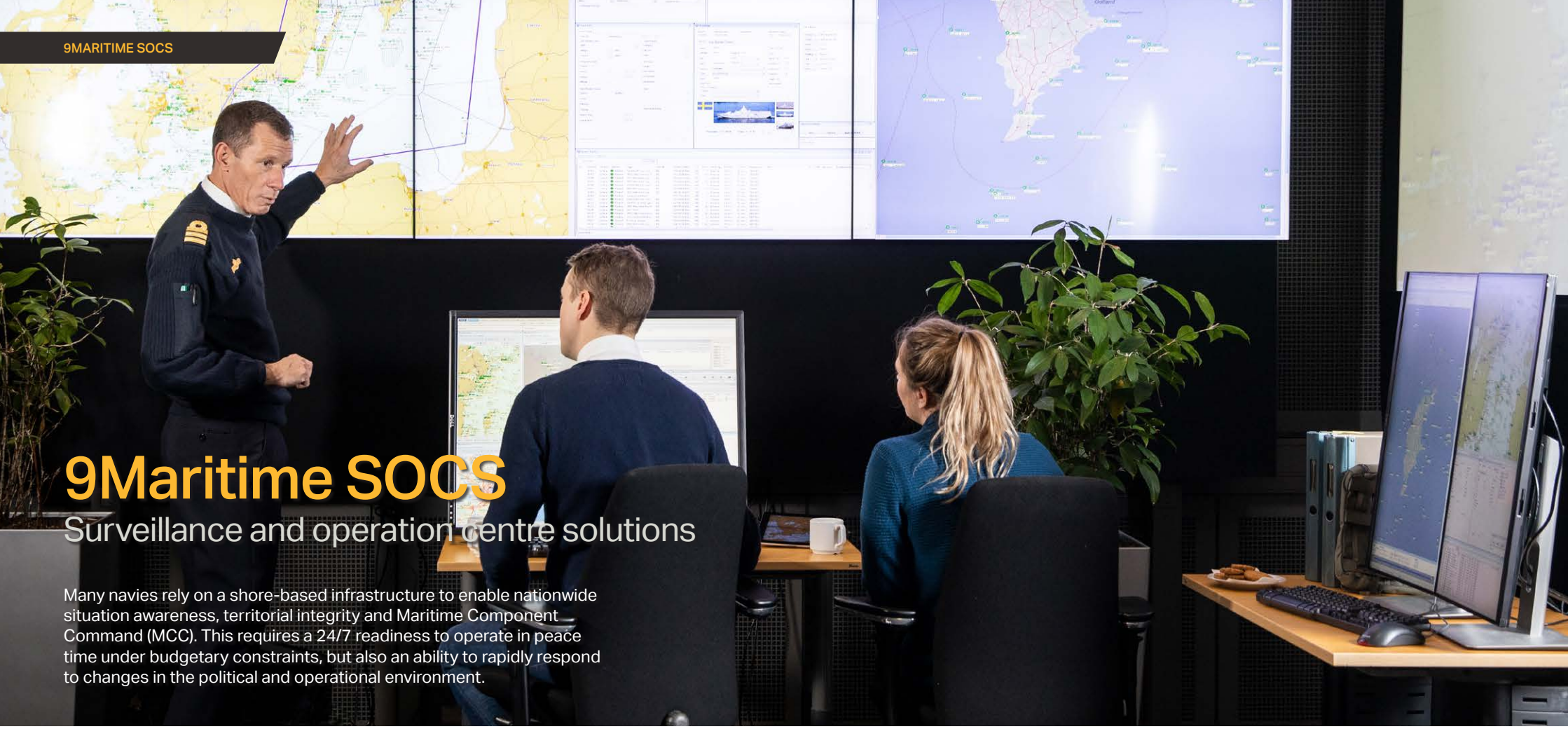
- AEW&C
- MPA
- MSA
- SR-platforms
- Helicopters

9Airborne MMS' capabilities include:

- Air and sea surveillance
- Sensor and weapons management
- Weapons control
- Target tracks and designation
- SAR coordination
- Air space management
- Data link management
- Communications
- Planning & Debriefing capabilities



1: Mission operator workstation. **2:** HF/VHF/UHF. **3:** SATCOM. **4:** Tactical data link. **5:** Intercom. **6:** IFF. **7:** EWS. **8:** Sonobuoy. **9:** ELINT. **10:** Weather radar. **11:** ADS-B Transponder. **12:** SAR direction finder. **13:** AIS transponder. **14:** Electro-optical sight. **15:** Surveillance radar. **16:** Mission data recorder. **17:** Mission computer. **18:** Flight management system. **19:** Mission Cockpit display.



9Maritime SOCS

Surveillance and operation centre solutions

Many navies rely on a shore-based infrastructure to enable nationwide situation awareness, territorial integrity and Maritime Component Command (MCC). This requires a 24/7 readiness to operate in peace time under budgetary constraints, but also an ability to rapidly respond to changes in the political and operational environment.

The 9Maritime SOCS is Saab's surveillance and operation centre solution for the Navy.

9Maritime SOCS provides the MCC with surveillance, planning, tasking and resource management tools such as:

- Common operational picture
- Operational planning and tasking
- Intelligence management
- Logistics management
- Military unit register and order of battle
- Equipment register and battle space object register

9Maritime SOCS also includes support for tactical surveillance, control and analysis of vessel movements. The main purpose is to detect, monitor, track and record maritime activities within an assigned geographical area. 9Maritime SOCS utilises Saab Track Data Fusion Engine (TDFE) to provide a real-time recognised maritime picture and also includes automatic surveillance to support the operator in detecting suspicious vessels, such as those travelling at high speeds, approaching sea lanes or entering specific areas.

The system is built on standardised Commercial Off The Shelf (COTS) products, designed for applications with high availability and reliability requirements. The modular design simplifies upgrades and addition of new functions.

A flexible communications plug-in architecture provides the means to use a wide range of sensors. More workstations and servers can easily be added as required.

Features

- Interoperability through tactical data links and formatted text messaging
- Multi-sensor tracking and correlation
- Automatic surveillance engine
- Ship database with ship photo capability
- Record/replay with advanced search and display

Configurations within 9Maritime SOCS are used within the Finnish and the Swedish Navies. The first configuration was deployed in 2003 and is in continuous operation.

AIS and GNSS solutions

Saab provides a full suite of Automatic Identification Systems (AIS) for shipborne, airborne and shore-based applications as well as GNSS systems to professional mariners around the world.

AIS for open and encrypted communications

Outstanding sensitivity and multi-GNSS performance

The R6 Supreme AIS platform builds on decades of experience from both civil and secure/naval applications, providing robust and reliable AIS positioning, as well as secure encrypted communications when required.

- Best-in-Class sensitivity (better than -118 dBm) and resilience to interference
- Control and Display Unit (CDU) with a 7" high-resolution 16M color touch display
- Dual network
- Multi GNSS receiver
- Web interface for monitoring and configuration



R6 Secure AIS

Saab R6 Secure AIS systems enables use of a third channel for encrypted information exchange outside the standard AIS 1 and 2 frequencies.

- Seamless simultaneous reception of encrypted and open AIS messages
- Encrypted text messaging
- Relay of received AIS targets over Secure Link
- Additional support for encryption modes according to STANAG 4668

R6 Secure W-AIS

The R6 Secure W-AIS (Warship AIS) is the pre-ferred solution among naval forces around the world, either as a standalone W-AIS or integrated in WECDIS solutions by key system integrators.

The W-AIS version adds various features for simulated AIS positions and pre-sets for alternative identities.

The Secure Mode Switch enables quick change of operational modes on Saab Secure AIS transponders.



Saab TransponderTech portfolio



R6 Supreme Class A AIS



R6 Secure AIS



R6 Secure W-AIS



Navigate with confidence and precision

R6 NAV GNSS/DGNSS

The R6 NAV platform provides market-leading GNSS performance. A versatile, robust navigation system built to exceed international requirements.

- 800+ channel multi-GNSS receiver including GPS, Galileo, GLONASS, BeiDou
- Anti-jamming and anti-spoofing technology that effectively suppresses attempts to compromise the vessel's position.

R6 NAV PRO

The R6 NAV PRO system upgrade enables multi-frequency operations and support L-band corrections for improved precision and integrity.

- Supports Atlas H10 and Galileo HAS corrections with sub-decimetre precision
- Supports Network RTK service with centimeter precision
- Jamming detection and alerts

R6 NAV PRO Compass

The R6 NAV PRO Compass is a powerful dual-GNSS sensor/compass, providing high accuracy heading and position with Inertial Support.

In addition to our single positioning NAV systems, the dual-GNSS sensor/compass provides:

- Top of the line accuracy for position, speed, course, heading and rate of turn
- Accurate longitudinal and transversal speed log
- Spoofing detection and alerts
- R6 NAV NEO version, high precision system approved for Panama Canal transits





R6 NAV GNSS/DGNSS



R6 NAV PRO/RTK



R6 NAV PRO Compass



AIS/VDES Base Stations

R60 AIS/VDES Base Station

The primary function of an AIS base station is to receive and transmit data to and from AIS equipped vessels operating within the base station's coverage area. The R60 can be seamlessly deployed as a standalone unit or integrated into a network.

Saab's AIS base stations has for a long time been recognised as the number one choice for performance and reliability by maritime administrations worldwide for marine traffic monitoring over vast coastal networks, harbor areas and offshore installations.

- Sensitivity better than -118 dBm
- Touch display for simple monitoring and configuration
- Built in web server for advanced configuration, monitoring and remote updates
- Prepared for VDES, next generation AIS

VDES – Next generation AIS

Saab has taken a leading position in the development of VDES, next generation AIS.

As vessel traffic increases, AIS range gets limited and requires new solutions. VDES will expand the AIS capacity and allow secure 2-way satellite communications as well as increase today's AIS local reach into global connectivity.

To support national and maritime authorities who participate in the development of VDES applications and explore the new possibilities, Saab provides test beds for VDES trials including shipborne VDES transponders, VDES shore stations and satellite VDES transponders.

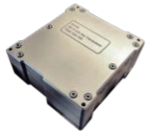
Saab TransponderTech portfolio



R60 AIS/VDES Base Station



R60 AtoN Station



R6 VDES Payload
(satellite transponder)

Airborne AIS transponders and receivers

Class-Leading Airborne AIS

Airborne AIS transponders provide significant advantages for operations in maritime environments. The aircraft literally takes AIS observation to new heights, allowing an overview that very much extends beyond the horizon of what a shipborne transponder can see. It is also a way to easily keep track of where the aircraft is, for example to monitor search patterns in search and rescue operations (SAR).



Flexible platform

Our airborne AIS transponders are developed specifically for use onboard aircraft and meet all relevant requirements for onboard installation in both fixed and rotary wing aircraft.

The equipment can be installed either as standalone units or integrated with other onboard systems such as radars, mission management systems or digital map generators.

Strong legacy

Saab has been developing and producing military and commercial aircraft for more than 80 years. The company also has a long tradition of integrating avionics. Based upon this knowledge and capability, every effort has been made to ensure the quality and reliability of our airborne AIS products.





R5A AIS Transponder



R5A RX AIS Receiver



R5A ADS-B
(embedded ADS-B Receiver)

Autonomous Ocean Core

Autonomous Ocean Core is a control system for uncrewed vessels, designed to manage a vessel in a safe and deterministic manner with a set of base functions.

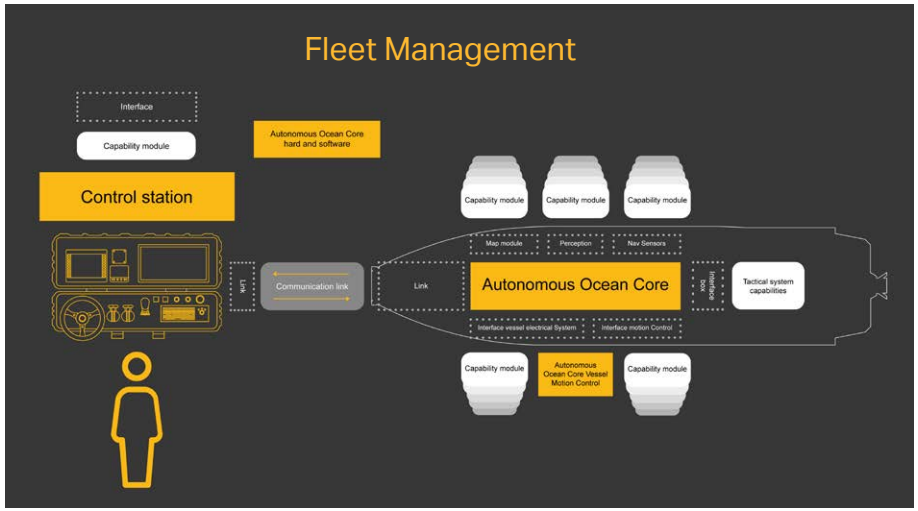
The **Autonomous Ocean Core** system is completely vessel-agnostic, capable of operating small to medium-sized USVs as well as UUVs up to XLUUVs. It offers multiple control modes including direct control, vector control, course control, and route control.

This system can operate under different states such as external safety (vessel uncrewed with restrictions), local safety (safety operator onboard with no restrictions), and assault (vessel uncrewed with no restrictions). Built on an open architecture, the control system provides an SDK for the development of new capabilities, allowing for easy addition of Saab capability packages and is open for third-party development. Additionally, it includes a fleet management system that enables multiple vessels to be controlled from the same remote control station.

The architecture of the system supports "plug and play" integration of sensors and payload systems.

Autonomous Ocean Core is a vessel-agnostic system, opening the possibility to install it on any craft intended to be used as an uncrewed platform. The system utilises a plug-and-play approach to sensors and payloads, enabling the same core system to be used for multiple different missions including assault, mine countermeasures, ISTAR, logistics, electronic warfare, and search and rescue.

Note: Restrictions refer to parameters such as maximum speed and maximum link downtime.



Naval Synthetic Environment

Naval Synthetic Environment with simulation and visualisation of air, surface and sub-surface in joint scenarios.

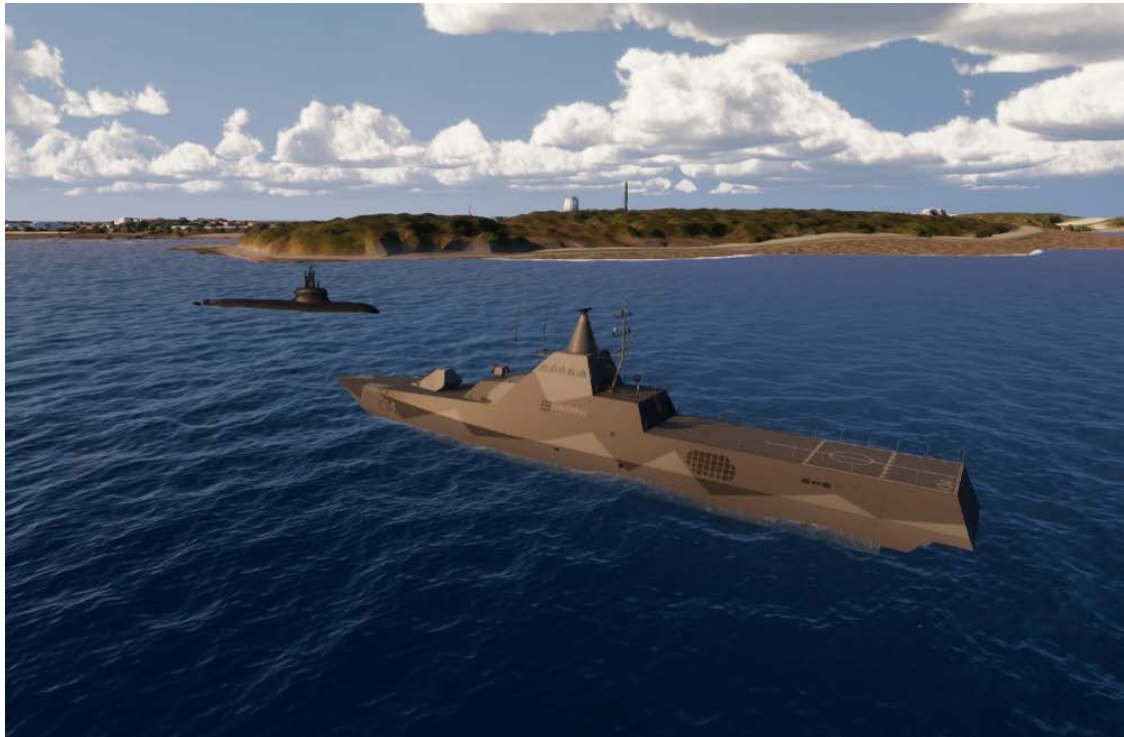
Naval Synthetic Environment is a suite of applications for building complex simulations for the naval domain. The generated simulations may be used for tactical training, system training or in test and verifications of real systems.

The synthetic environment supports the air, surface and subsurface dimension and its environment and supports a wide range of sensors, weapons, 3d-models and behaviors.

The ability to control and manage these systems is essential to maintaining the quality of a training exercise and to achieving the training objectives.

There are out-of-the box applications for off-line and on-line scenario management, scenario execution and scenario evaluation.

The synthetic environment is an open architecture supporting 3rd party integration of simulation models and integration of operational systems through the SDK (Software Developer's Kit)



Naval Support solutions

Smart support at every stage

Saab's legacy has always been about providing maximum performance and efficiency with minimal resources, smart has been the key word. We are known for our strong heritage and we have over a century of experience delivering adaptable, flexible and cost-efficient support solutions.

This is the basic requirement for everything we do and support is no exception.



Support begins at the earliest stages of planning and continues through to decommissioning.

Saab gives you the advantage of a true lifecycle commitment. We have been providing support for ~100 years so you can rest assured that our commitment is long-term.

Partnership for the future

We believe in sharing our technology, ideas and thinking with our partners for mutual benefit and better outcomes.

By working close to our customers we gain experience and knowledge together, which allows us to meet new challenges and opportunities side by side. Around the world, Saab has a firm belief in investing in local businesses and industries and we strive for local presence when possible, we believe in partnership for the future.

Certificates and approvals

Saab hold almost 70 different certifications and approvals which ensures that our delivery complies with current regulations.

These certificates and approvals also serve as excellent guidelines, allowing us to provide world class support whatever the challenge.

Scalable support levels

We thoroughly analyse each customer's specific needs in order to optimise the support and maintenance we offer.

Our goal is to design a solution where we interact perfectly with the existing organisation.
No gaps - No overlap.

We have a long history and extensive experience in providing support and our soluitions are fully scalable and modular. We can act as the sole provider of availability based support solutions (turn-key-solutions), or we can tailor a support solution that fits any customer's needs.

Our support concept

Support can be as complicated as important, and that's why Saab has developed a generic and comprehensive model for customer needs.

The model is well proven and has been deployed in all domains all over the world.

Saab's support concept offers support in the following distinct phases:

Establish support. From technical to accessible.

A relevant and efficient design of a support system is key to avoid problems in the in-service phase. This initial support phase ensures the availability of the resources required to achieve the system's initial operational and maintenance capability.

In-service support – adaptable solutions, optimal performance

Initial support is followed by the in-service support phase where Saab help counter any challenge by balancing the need to maximise availability with the goal of reducing costs.

Availability is not an obvious state, but yet a requirement to maintain efficiency and stay focused on the core operation.

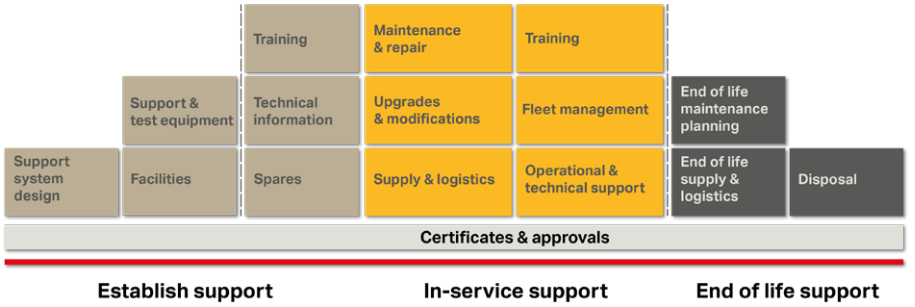
End-of-life support. Leave it to us.

When it's finally time to phase out a system or a product there are many areas to be considered in order to achieve a cost efficient, safe and acceptable result.

Using Saab's end of life management expertise, we can provide smart and cost efficient solutions to help you phase-out, archive, recycle and dispose of the affected products or systems.

The support life cycle

Smart support at every stage



CBRN solutions

The CBRN threat is real – are you prepared? It makes all the difference.

The world is facing increased threats from general political and religious instability, in regions or between states. Sadly enough, terrorism, pandemic diseases and an increased presence of biological and chemical substances are becoming a natural part of our everyday lives.

Early warnings – the key factor

One of the most crucial and efficient counter-measures you can invest in is early warnings to units and personnel. This is a key factor in limiting the effects of CBRN threats and it makes all the difference. This is the reason why Saab has decided to offer a complete concept for protection against CBRN agents.

The solution is a complete Automatic Warning and Reporting system (AWR), designed for quick and easy deployment and, maybe the most important
feature of them all, it has been specifically designed for use by non-specialists, in the field or offshore.

Our CBRNe offer includes;

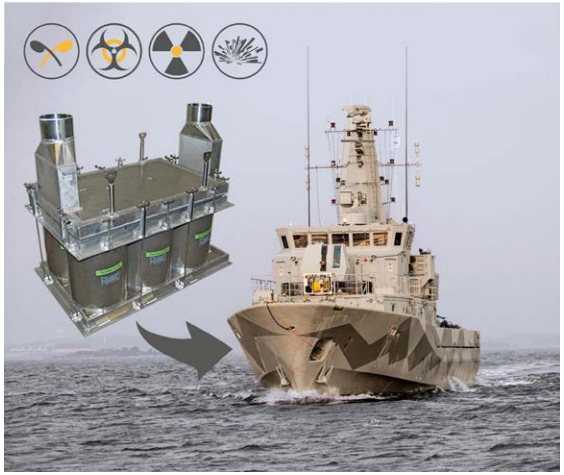
Saab can provide solutions for helicopter-to-ship integration in a range of areas, including:

- AWR systems
- CBRN/TIM sampling equipment
- Transport Packaging of hazardous CBRN/toxic material samples
- COLPRO
- Integration services
- Personal protection
- Training and simulation
- Support solutions

Flexible and modular decision support

AWR is a flexible, modular and future proof solution with sensors and equipment designed for both mobile use, mounted on marines or smaller vessels, as well as in fixed installations on a ship.

The AWR consists of both hardware and software, all connected in a role-based network, designed to provide early warnings to units and personnel on a mission or in the incident area. By presenting fused and relevant data, the system provides invaluable decision support to operators and dispatchers and fast and accurate decisions are key factors in limiting CBRN threats.





Role based, independent, flexible and sensor agnostic

The system is sensor agnostic and has been designed with an open architecture based on commercially available platforms to provide a seamless solution between new and existing systems and equipment.

Tested, proven and certified

Our systems have been certified, thoroughly EMC tested and successfully deployed.

Efficient and accurate sampling

Our CBRN sampling equipment products have been designed for sampling of CBRN agents.

All products are based on NATO Standards and the equipment fulfils the requirements for forensic samplings.

The products have different levels of complexity and fit the purpose for a wide range of sampling missions.

Safe and certified transport

Saab offer a unique container designed for safe transportations of CBRNe samples and other hazardous materials. It's certified for all types of transportations, including road, railway, boat and airplane, in accordance with the transport regulations of ADR, RID, IMDG-code and ICAO-TI/IATA.

Training and simulation

Realistic exercises with real CBRN substances and agents are often costly, complex and environmentally hazardous to conduct.

The need to train with real substances and agents will always be there. However, by using realistic simulations of dispersions together with source strengths, spill locations, geographical environment, weather conditions and positions of sensors, vehicles, personnel etc., this can be greatly reduced.

Based on realistic CBRN-dispersion data, Saab has created a synthetic dispersion engine, which can support different training needs by using simulated distribution of CBRN dispersions.

Complete support

To meet current and emerging threats, Saab's CBRN solutions are fully supported by responsive through-life-support, cost-effective logistics and a training network.

Deployable Healthcare solutions – The difference between life and death

Saab can design a Deplayable Healtcare solution (DHC) to meet any requirement, supplying a comprehensive capability covering both medical equipment and necessary facilities. We recognise the fact that every nation and customer has its own specific methodology and process, and hence the final concept and design are conducted together with the customer in order to maximise solution efficiency.

We are with you all the way

Our experienced personnel are skilled at creating all medical arrangements, including sub-systems, from basic design to delivery and installation of the complete solution on board the vessel or elsewhere.

It is our firm belief that treatment of illness and injuries shall be as efficient as possible.

This means that the DHC must be designed not to interfere with the vessel's normal operations or other ongoing activities in the medical department on the vessel.

In-house capability

Medical facility design experts at Saab conduct all the design and development.





Benefits

The flexible and modular design features of the vessel's Deplyable Healthcare solution allow the following key features and benefits:

- Integrated medical logistical support functions, which allows the medical staff to undertake their work without external support for any requested period.
- A flexible ward area that can be tailored from normal configuration to full medical capability, thereby making maximum use of the ship size and providing a cost-effective solution.
- A triage area adjacent to the flight deck and the core area, allowing medical staff to promptly assess and treat patients and efficiently transfer them to the necessary medical facilities.
- The layout of the DHC can be carefully designed to promote efficient transport of patients between various hospital facilities.
- Compliance with all necessary standards and requirements.



Helicopter support

Support solutions for your mission success

Saab has vast experience in supporting helicopters both on the ground and in the air, as well as integrating helicopter facilities on ships. With Saab's support you'll always be well equipped, whatever the mission.

Your long-term partner

We understand the importance of aircraft availability to the success of your mission. For decades, Saab has provided effective support solutions for both rotary and fixed-wing aircraft worldwide.

Our primary objective is to deliver efficient support when it's needed, where it's needed. A support solution delivered by Saab guarantees that your system will provide optimum value throughout its lifecycle.



Helicopter-to-ship integration

Saab can provide solutions for helicopter-to-ship integration in a range of areas, including:

- Electric power
- Fuel and weapon storage
- Ground handling equipment
- Fire and rescue solutions
- Safety equipment
- Fuel supply equipment
- Air supply equipment
- Landing lights
- Integration of wind, heave and pitch sensors

Component MRO

Component maintenance, repair and overhaul (MRO), including implementation of service bulletins and modifications, for airborne components and support equipment.

CAMO and Fleet Management

Saab provides Continuous Airworthiness Management (CAMO) and fleet management services for customer aircraft fleets.

Aircraft maintenance and modifications

Saab provides maintenance, inspection and overhaul of aircraft platforms at line and base level, including implementation of service bulletins and major modifications.



Design and production

At Saab, we know the importance of efficient delivery of design and production services for aircraft, airborne equipment and support equipment. With Saab as holder of Design/Production (DOA/POA) approvals this would typically be based on Supplemental Type Certificates (STC).

Lifecycle optimisation

Our offering includes services for optimisation of support resources and platform utilisation during their lifecycle. Typical services include system analysis and optimisation, improvements to maintenance programmes, engineering services, publications and a Failure Reporting And Corrective Action System (FRACAS). These services are designed to sustain airworthiness and cost-effective operations.

Training

We have long experience in providing management, administration and execution of training activities for air and ground crew.
This also includes analysis of training needs in order to tailor training to suit the individual operator's requirements.

Logistics and supply

Saab can help monitor, control and replenish storage levels for spares. We can also help in the transportation of material, including receipt and inspection, storage, packing and dispatch in a safe and secure way.

Flight operations

Our offering includes aircrew services and flightline support activities.

Support solution management

Our main strength is securing the delivery of cost-effective support solutions for individual customer needs, from single services to complete undertakings for aircraft fleet availability.

Saab has developed a flexible and comprehensive product portfolio to meet the support needs of its customers. In order to improve availability and cost-efficiency, we thoroughly analyse each customer's specific operational needs.

Our goal is to deliver a support solution where we can integrate perfectly with the customer's own organisation. No gaps, no overlap.

Special flight operations

For live firing, EW training and test and evaluation

In naval operations, safety and precision counts for everything. Good training can help anti-air defence crews to understand the challenges of modern missions.

Since 1986, Saab has provided quality aerial target services for army, navy and air force organisations.

Today, Saab is a qualified Electronic Warfare and target towing training operator, providing modern and cost-effective training for national and international defence customers.

Saab offers three-dimensional Opposing Force (OPFOR) assets, including set-up of the OPFOR scenario, data gathering, normalisation, asset coordination and handling.

Our offering consists of:

- Aerial targets for live fire training
- Aerial targets in formation for simulating threat scenarios
- Ground-based jammer systems for Electronic Warfare training
- Aircraft equipped with jammer systems and missile threat simulators for Electronic Warfare training
- Aircraft for flight calibration of instrument landing systems at airports
- Aircraft with towed sphere for calibration of radar systems

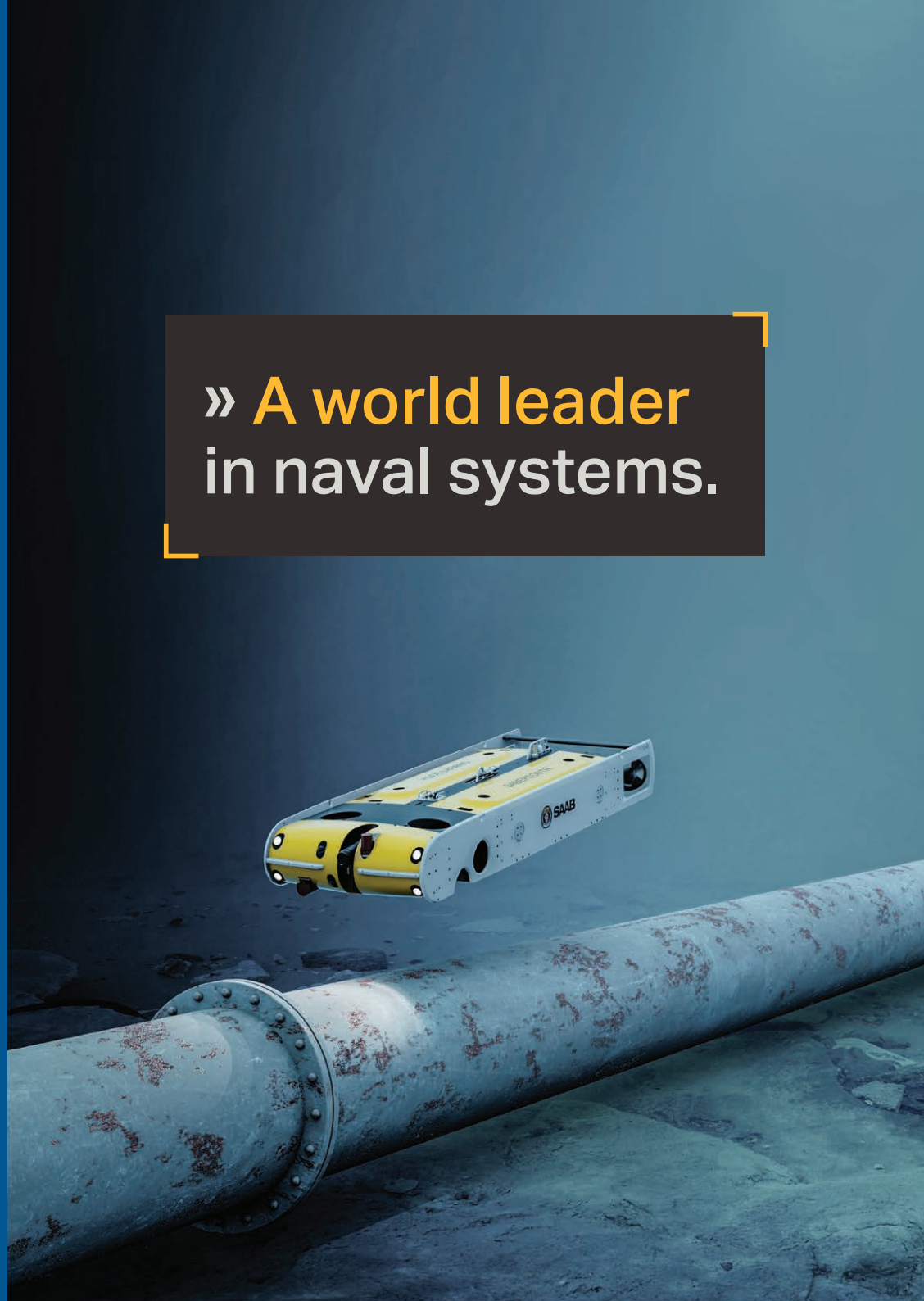


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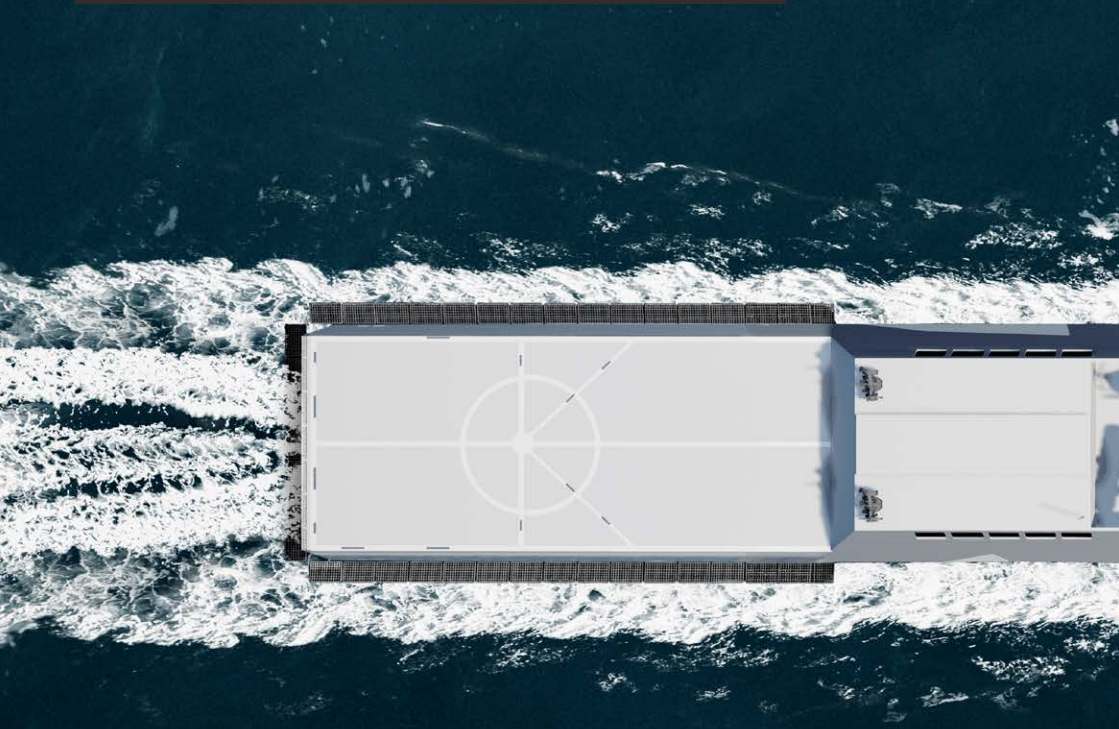
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Specifications subject to change without notice.
Naval Product Catalogue – ENG – ver. 2, October 2024

» A world leader in naval systems.



You can rely on Saab's thinking edge to deliver innovative, effective products and solutions that enhance your capabilities and deliver smarter outcomes.



saab.com/naval

SAAB