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Naval Systems

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NAVAL SYSTEM SOLUTIONS

ASELSAN is the "system solution partner" for naval shipbuilders and navies, providing cost efficient, custom made turn-key solutions.

ASELSAN provides Integrated Combat Systems including design, development, integration and installation for combatant and non-combatant surface and subsurface naval platform construction and modernization programs.

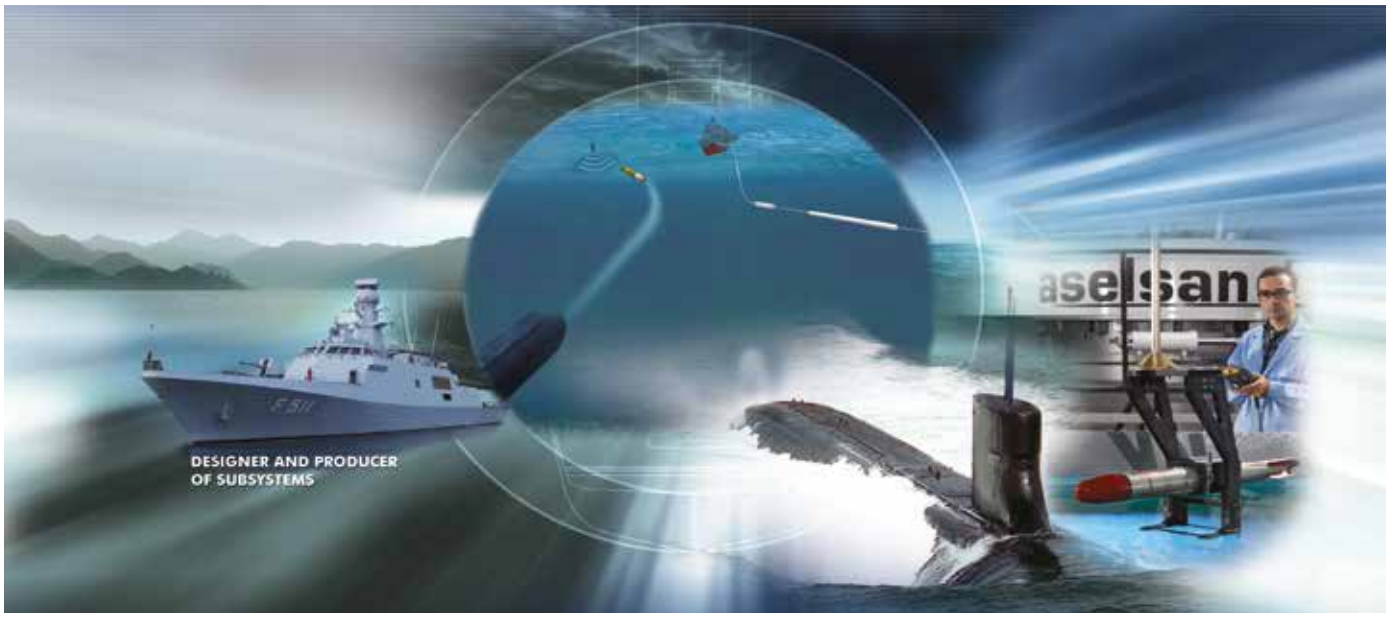
DESIGN AND PRODUCTION OF SUBSYSTEMS

ASELSAN is also a designer and producer of subsystems integrated in the Naval Combat Systems such as;

- Naval Weapon Systems
- Gun Fire Control Systems
- Naval Electronic Warfare and Radar Systems
- Communication Systems
- Electro-Optic Systems
- Navigation Systems
- Mission System Solutions for Research Vessels
- Integrated Research Systems
- Torpedo and Underwater Acoustic Warfare

SYSTEM OF SYSTEMS

ASELSAN implements in-house system engineering process to design Modular Integrated Combat System fulfilling mission requirements of the individual naval platform.



Weapon & Sensor Selection Process

- Mission analysis
- Threat analysis
- Solution alternatives
- Mission performance analysis

Basic Criteria for System Design

- Reaction times & automation needs
- Crew concept & ship's organization
- Operator optimization

Subcontractor Management

- Foreign System Supplier/Service Providers
- Domestic Production/Design/Services

Common Features of the Systems

- Platform Independency
- Subsystem Integration Flexibility
- Growth Potential
- Cost Efficiency
- Flexible Operational Capability

COMBAT SYSTEM SOLUTIONS

INTEGRATED COMBAT SYSTEM

Combat System Solution is an electrical and mechanical integration concept for the mission specific sensor and weapon subsystems in accordance with ships, the other systems on ships, requirements of customers and process of ship construction. The flexibility of the system enables extended functionalities to be implemented easily. Combat System Solution concept is based on the intelligent and self-sufficient sensors and weapon systems developed by ASELSAN.

Combat System Solution provides multi level redundancy and fault tolerant system design.

Combat System Solution is also capable of integrating other manufacturers' sensor and weapon systems by its intelligent interfaces supporting both universal standards and custom made implementations.

AN "INTEGRATED SOLUTION" FOR NAVAL PLATFORMS

Modularity concept enables different combat management system implementation according to specific requirements of the customers.

Combat System Solution can easily be tailored according to specific customer requirements as well as platform restrictions, providing user friendly systems, optimal technical performance and effective life-cycle costs.

Combat System Solution also provides sensor and weapon management infrastructure including weapon and sensor components for the network centre combat systems.

NAVAL WEAPON SYSTEMS

ASELSAN has stabilized platform solutions for guns, anti submarine warfare rockets and missiles launchers providing fast reaction and accurate positioning of relevant weapons to engage surface, subsurface or air targets.

ASELSAN naval weapon systems constitute stand alone as well as integrated defense capabilities, interoperable with C4ISR systems, of high efficiency and reliability.

GUN FIRE CONTROL SYSTEMS

Small caliber guns are utilized for asymmetric warfare whereas larger guns are engaged for accomplishing self defense and support fire tasks under remote operation autonomously or via the ship's combat management system.

NAVAL EW & RADAR SYSTEMS

ASELSAN produces ESM & ECM systems for surface and subsurface naval platforms as well as state of the art Low Probability of Intercept (LPI) Radar.

EW systems solution comprises counter measure capability and direct integration with any type of counter measure system.

COMMUNICATION SYSTEMS

ASELSAN integrated communication systems for naval surface, subsurface and airborne platforms, provide both tactical communication and ship-shore to ship broadcast including maritime rear link networks of secure / non-secure voice and data transmissions among the naval platforms and shore stations also supporting appropriate data rate and format for any naval C4ISR applications.

Naval communication system solutions comprise the integration of the ship's internal communication facilities such as telephone, public address, intercom, audio alarm, sound powered telephone, intranet and entertainment system with external RF communication capabilities including satellite communication.

ASELSAN also manufactures satellite communication terminals for both surface and subsurface platforms, military radios covering all RF band with ECCM capability including indigenous state of the art software defined networking radios.

ELECTRO-OPTIC SYSTEMS

ASELSAN electro-optical systems solutions for naval surface and airborne platforms, provide target search and tracking capability within the spectrum of IR to UV wavelength in order to perform the mission with high redundancy and user flexibility features. Electro-optical system solutions combine thermal cameras, laser range finders, daylight & low level light TV's, night vision devices and laser warning systems.

It provides track data & video distribution with high accuracy, data rate/format for any naval C4ISR system or fire control system requirement.

ASELSAN also manufactures forward looking IR directors, thermal cameras, laser warning systems and laser range finders for naval applications including airborne platforms and fire control systems.

NAVIGATION SYSTEMS

ASELSAN NAVAL INERTIAL NAVIGATION SYSTEM includes advanced gyro technology, embedded GPS Receiver (EGR), Universal Interface Unit that is compliant with old and new type ship platform interfaces and Navigation Control&Display Unit. The system is an integrated, extremely reliable, tightly coupled, embedded INS/GPS/Log Speed navigation system that provides superior position, velocity and attitude performance, quick response time and high anti-jam performance.

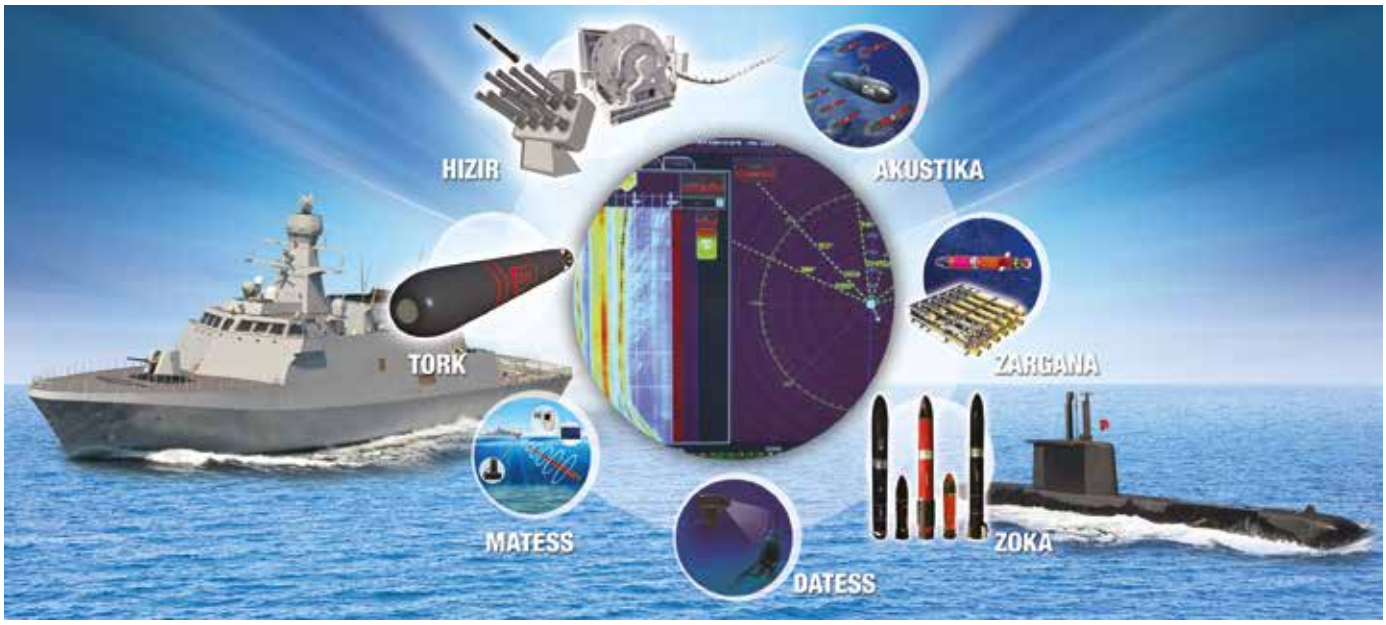
(W)ECDIS, gathering the ship's position, heading and speed through water information from the navigation sensors, offers situational awareness to the seafarer with route planning and monitoring options on electronic navigation charts.
ASELSAN ECDIS, the civilian member of ASELSAN WECDIS product family, is an electronic chart navigation system for commercial ships that complies with IMO standards and increase the operational efficiency by ease of planning activites on bridge while contributing to safe navigation.
ASELSAN WECDIS is compatible with the NATO and military standards in addition to the IMO standards. ASELSAN Digital Plotting Table is developed for wide screen usage of WECDIS and enables extra features according to the platform it's integrated.

WECDIS

PLOTTING TABLE

ANS-510D

TORPEDO and UNDERWATER ACOUSTIC WARFARE



HARD-KILL SYSTEMS (TORK)

i. Exterminates/neutralizes the threat torpedo
ii. Unique and modular design
iii. Effective against all types of torpedoes
iv. Integration with Soft-Kill systems

TORPEDO COUNTERMEASURE SYSTEMS (ZARGANA, HIZIR, ZOKA)

i. State-of-the-Art products for Submarines and Surface Ships
ii. Decision Support System
iii. Computer-Based Simulation Model
iv. Acoustic Jammers and Decoys of various types and sizes in accordance with platform requirements
v. Effective defense against all types of acoustic homing torpedoes
vi. Unique algorithms

SONAR SYSTEMS

i. Sonar Systems for Submarines and Surface Ships
ii. Mine Detection Sonar (MATESS)
iii. Diver Detection Sonar (DATESS)
iv. Intercept Sonar System
v. Active/Passive Sonar Systems
vi. Configurable System Solutions in accordance with platform requirements
vii. Modular Design and Open Architecture

HARBOUR UNDERWATER SURVEILLANCE SYSTEMS

i. Threat Detection in Strategic Harbors and Facilities using various sonar types
ii. Integrated Sonar System Solutions
iii. Detection, Classification and Localization of Surface and Subsurface Threats
iv. High Accuracy Distance and Angle determination of targets
v. Adaptive System Architecture for various environment and target conditions

ACOUSTIC AD-HOC NETWORK (AKUSTIKA)

i. Underwater Acoustic Communication Network
ii. Collaborative operation
iii. Platform-Mobile vehicle communication
iv. Automatic link establishment and involvement to the network at anytime
v. Resistance against electronic jamming and detection

SUBMARINE SYSTEMS

i. System solutions and integration to submarines
ii. Submarine modernization solutions
iii. Integrated Communication Systems
iv. Satellite Communication Systems
v. Electronic Support Measurement System (ESM)
vi. Radar Early Warning System
vii. Integrated Sonar Systems
viii. Navigation Radar
ix. Echosounder (KULAC) and Sonar Beacon Systems

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MISSION SYSTEM SOLUTION FOR RESEARCH VESSELS

ASELSAN Integrated Research System Solution Platforms:

- Underwater Search and Rescue Vessels
- Hydrographic, Oceanographic Research Vessels
- Geological,Geophysical Research Vessels
- Seismic Research Vessels
- Scientific Research Vessels

ASELSAN Integrated Research System Solution

- Research Equipment and Systems
- Navigation Systems
- Communication Systems
- Mission Planning&Monitoring Systems

- Providing the best equipment to match End User Requirements (Design/Manufacture/Procurement)
- Integration and Installation special to End User and Platform Requirements
- Logistic Support
  - Training
  - Documentation
  - Maintenance and Support
- Operational Support

INTEGRATED RESEARCH SYSTEM SOLUTION FOR RESEARCH VESSELS

INTEGRATED RESEARCH SYSTEM

ASELSAN Integrated Research System is turnkey solution for Platforms performing underwater search and rescue, hydrographic, oceanographic, geological, geophysical and seismic research activities
ASELSAN Integrated Research System includes research equipment and mission critical navigation systems, control systems and integrated communication systems.

- Integrated Research System General Properties
- Turnkey COTS Solutions for needs of the individual research ship
- Proven Network Protocols
- Reliable System Design-Automatic Detection of a failed sensor connection
- Scalable modular design
- Open System Architecture for future Upgrade

Seismic Research Systems | Hydrographic Research Systems | Oceanographic Research Systems | Geological Research Systems | Geophysical Research Systems

RESEARCH EQUIPMENT AND SYSTEMS

- 2D/3D Seismic Research Systems
  - Seismic Streamer
  - Seismic Recording Unit
  - Seismic Navigation System
  - Seismic Power Unit(Compressor/Air Guns)
  - Seismic Data Processing Unit
  - Seismic Winch Systems
- High Resolution Shallow Water Seismic Research Systems
- Singlebeam Echosounder
- Multibeam Echosounder
- High Resolution Seismic System
- Side Scan Sonar
- Marine Magnetometer
- Marine Gravitymeter
- Water Sampler
- CTD
- Doppler Current Profiler
- Geological Corer Equipment
- Geological/Oceanographic Winch Systems

NAVIGATION SYSTEM

ASELSAN SİLYON Integrated Navigation Control System

- Navigation Equipment and Systems Depending Needs of the Individual Research Platform
- Turnkey COTS/Military Solutions
- Integrated with ASELSAN VKS Data Control System

COMMUNICATION SYSTEM

ASELSAN Integrated Communication System

- Suitable Solution Depending on Needs of the Individual
- Research Platform
- External Communication Systems
- Internal Communication Systems
- Integrated with Research Equipment and Systems
- Turnkey COTS/Military Solutions

MISSION PLANNING&CONTROL SYSTEM

ASELSAN Armador Mission Planning & Control System

- For Spesific Research Mission
- Planning
- Displaying and Monitoring
- Information centre for Operation Monitoring

Data Control System

Navigation Systems

ARMADOR Mission Planning&Monitoring System

CCTV

Integrated Communication System

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VATOZ®

NAVAL MISSION MANAGEMENT SYSTEMS

SYSTEM DESCRIPTION

VATOZ® Naval Mission Management System is a command and control system family that is to be used on several platforms & landbase operation centers for surveillance, situational awareness, mission control, sensor and weapon control. The platforms can be different scale naval platforms such as offshore-patrol boats, coast guard boats or fast attack crafts. VATOZ®-BOAT is run on naval platforms,whereas VATOZ-BASE is used on landbase control stations. VATOZ® Naval Mission Management System is based on modular, open and distributed architecture, that is scalable and redundant system which allows easy integration of sensors and weapons.

CAPABILITIES OF VATOZ®-BOAT

- Command and Control
- Sensor - Weapon Management
- Surveillance
- Cooperative Engagement Capability
- Situational Awareness
- Track Management & Data Fusion
- Mission Control
- Threat Evaluation/ Weapon Assignment and Sensor Allocation
- Tactical Picture Compilation
- Alarm Management
- Electronic Warfare Support
- Recording/Replay/ Reporting
- Navigation Management and Maneuver Control
- Resource Management
- Network Enabled Capability

CAPABILITIES OF VATOZ®-BASE

- Command and Control
- Joint Tactical Picture Compilation
- Airborne , Surface and Subsurface Situational Awareness
- Alarm Management
- Tactical Mission Control
- Recording/Replay/ Reporting
- Track Management & Data Fusion
- Resource Management
- Network Enabled Capability
- Sensor Management

FEATURES OF VATOZ® NAVAL MISSION CONTROL SYSTEMS

- Effective and Reliable Defense/Attack Capability
- User Friendly Interface
- Interoperability
- Multi Operator Support
- Flexible/Scalable and Modular Design (Allowing easy adaptation for different platforms)
- Console Mounted / Desk Mounted
- Qualified, Proven and Reliable System
- Map Support (S57, S-63 etc)
- Open Redundant and Distributed System Architecture
- Night/Day/Dusk Mode
- Ruggedized & Compatible with Military Standards
- Multi Operating System Support (Linux, Windows)
- Multi Language Support (Turkish, English, etc.)
- Simulation & Training Modes
- MIL-STD-2525B, NTDS Symbology

INTEGRATED SYSTEMS

- Surface To Surface Missiles (ASELSAN-MILAS, MBDA-Otomat, MBDA-Marte)
- 2D Search Radars (THALES-Variant 2D Radar)
- Surface To Air Missiles (MBDA-Simbad)
- Electro Optic Tracking Systems (ASELSAN-Stabilized EO Suite, ASELSAN-ASELFLIR-200)
- Stabilized & Remotely Operated Weapon Systems (ASELSAN-STAMP, ASELSAN-STOP,ASELSAN- MUHAFIZ)
- Electronic Support Measure Systems (ASELSAN-ARES-2N)
- Gun Fire Control Systems (ASELSAN-40mm TAKS)
- Navigation Systems

REFERENCES

- Export Project -Patrol Boats (10 platform)
- New Type Patrol Boat (16 platform)
- Fast Craft Patrol Boat Project (6 platform)
- YUNUS Project – 2 Harbors (Surface and Subsurface Surveillance System for Naval Harbors of Turkish Navy)

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