

# CATALOGUE

## 2024

 **KOÇ** | KoçSavunma  
Koç Bilgi ve Savunma Teknolojileri A.Ş.

 **KOÇ** | **KoçSavunma**  
Koç Bilgi ve Savunma Teknolojileri A.Ş.

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# / Introduction

## Background

Koç Bilgi ve Savunma Teknolojileri A.Ş. (KoçSavunma) was established in METU-Teknokent on December 27, 2006, with its corporate headquarters located in Istanbul and operational activities hub in Ankara, with the mission of producing information technologies and marine systems technologies by employing national and inventive solutions.

KoçSavunma is a subsidiary of KoçSistem, which operates within Koç Holding, the only Turkish company in the Fortune Global 500 ranking. Since its establishment, KoçSavunma has focused on becoming a technology-oriented establishment that develops electronic systems for naval platforms, especially underwater acoustic solutions, with an R&D-based approach and has built its strategic goals on these principles.

TÜBİTAK-supported and product-oriented R&D projects are the basis of R&D activities, especially the Embedded Acoustic Detection and Analysis System (GATAS), Underwater Surveillance Network Project (SAGAP) and Smart Mine (MALAMAN) projects. KoçSavunma's motto surrounding its activities is "Expansion by Taking Integral of Technology and Derivative of Products", and thanks to its experience and know-how gained from R&D projects, the company has continuously expanded its product family and managed to develop, produce and offer the extensive cutting-edge technological product range in our catalogue to the defense sector. In accordance with its sustainable growth strategy, KoçSavunma has established its entire company headquarters and plant infrastructure in a private building in the Bağlıca district of Ankara since October 6, 2023.

### Vision

To be a respected and reliable leader in the national and international defense markets in the field of electronic systems for naval platforms, especially acoustic-based systems, by providing indigenous solutions with critical technologies.

### Mission

To produce technology-based unmatched services and inventive solutions for the national defense industry in the field of naval platform electronic systems and especially in the field of acoustic systems with maximum national contribution to minimize external dependency, and to offer these versatile services and solutions in the international defense industry and commercial markets.





# KoçSavunma | Milestones

2007 - 2009

**DETERMINEE FOCUS AREA**

**Command Control Systems and Maritime Systems**

- Turkish Armed Forces Command – Control / Information / Communication / Vehicle Simulators systems
- Underwater Acoustic Systems
- Naval Platforms Electronic Acoustic Systems

2009 - 2014

**R&D/PD TECHNOLOGY ACQUISITION**

**Naval Platform and Acoustic R&D Projects**

- MALAMAN Bottom Mine
- Diver Detection Sonar
- GATAS (Smart Buoy)

**New Type Submarine Projects**

- Torpedo Countermeasure System
- Sonar Beacon System
- Breathing Air Monitoring System
- PC Network System / Ship Information Distribution System

2014 - 2018

**PRODUCTIZATION**

**Product Development for Naval Platforms**

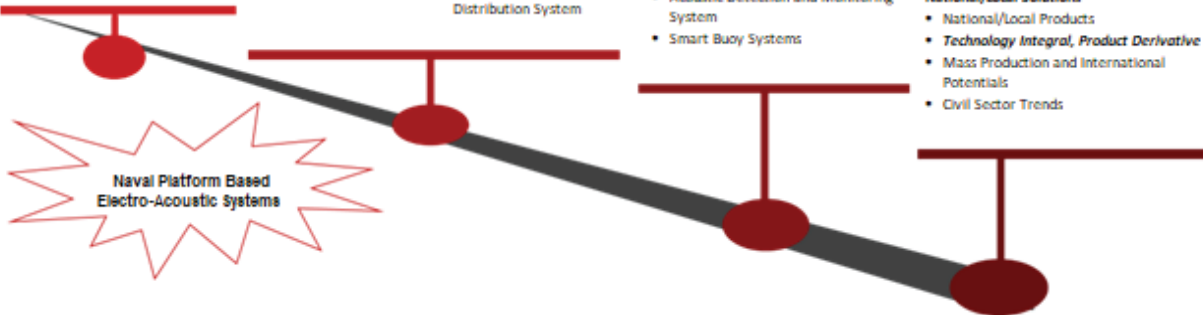
- National Torpedo AKYA Projects
- TÜPRAŞ Diver Detection Sonar
- Acoustic Detection and Monitoring System
- Smart Buoy Systems

2018 ⇒

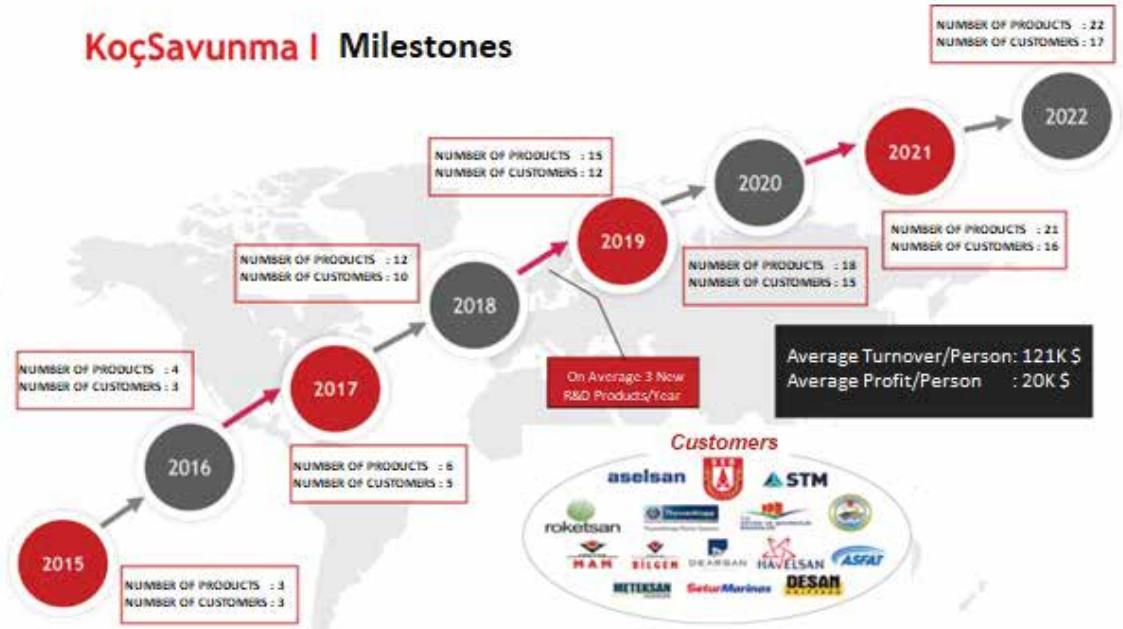
**PRODUCT/MARKET MANAGEMENT**

**National/Local Solutions**

- National/Local Products
- *Technology Integral, Product Derivative*
- Mass Production and International Potentials
- Civil Sector Trends



# KoçSavunma | Milestones



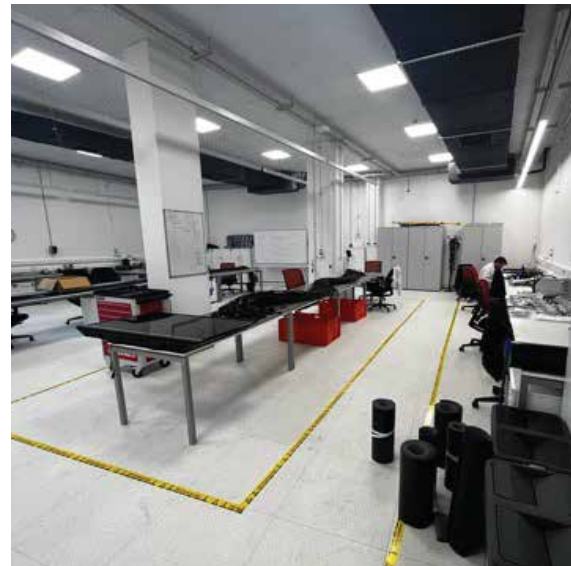
# / Facility and Infrastructure



## Facility

- Indoor Area: 2500 m<sup>2</sup>
- Outdoor Area: 500 m<sup>2</sup>

Laboratory



## “ R&D Design Center

- Total Area: 842 m<sup>2</sup>
- Office: 577 m<sup>2</sup>
  - Laboratory: 265 m<sup>2</sup>”



Pressure Tank

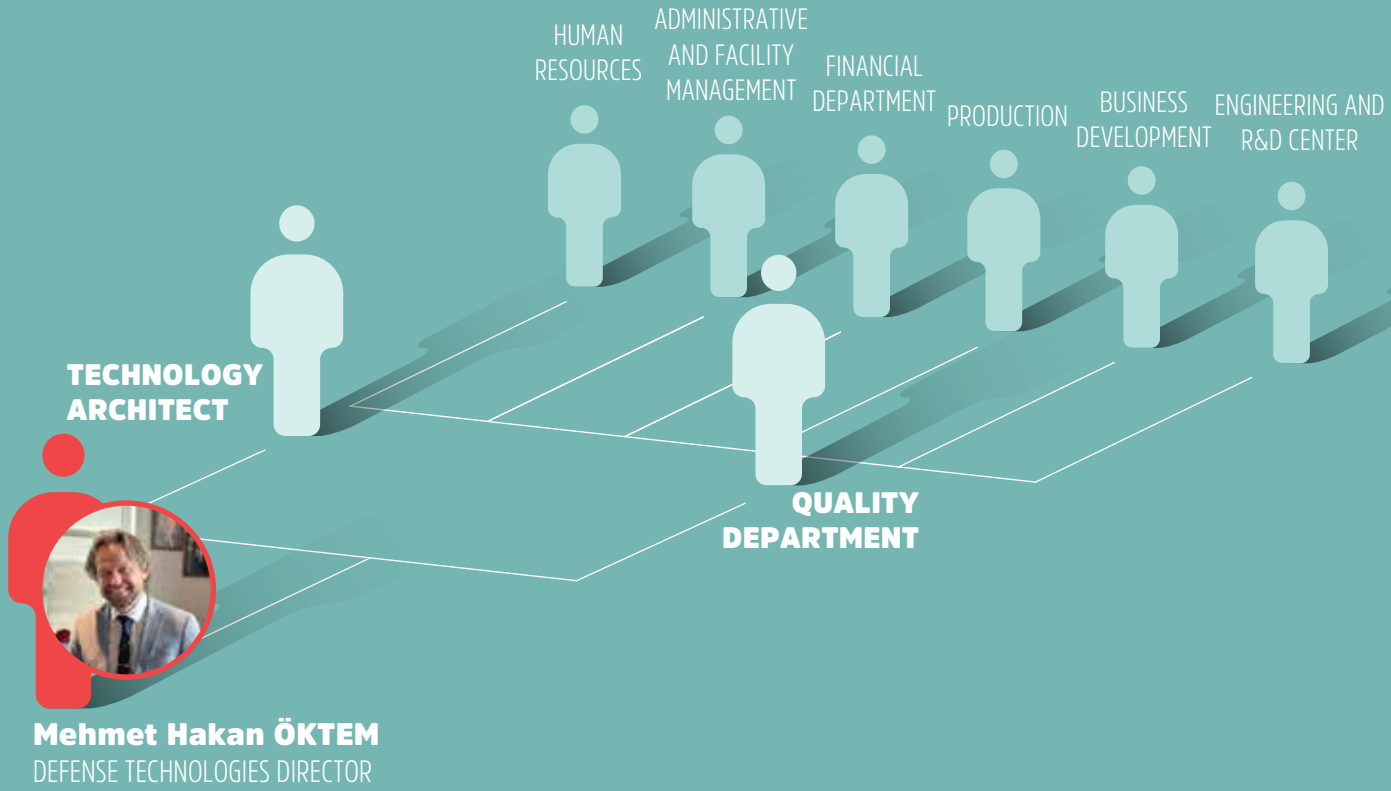


Climatization Cabinet and Pressure Tank



Acoustic Test Pool

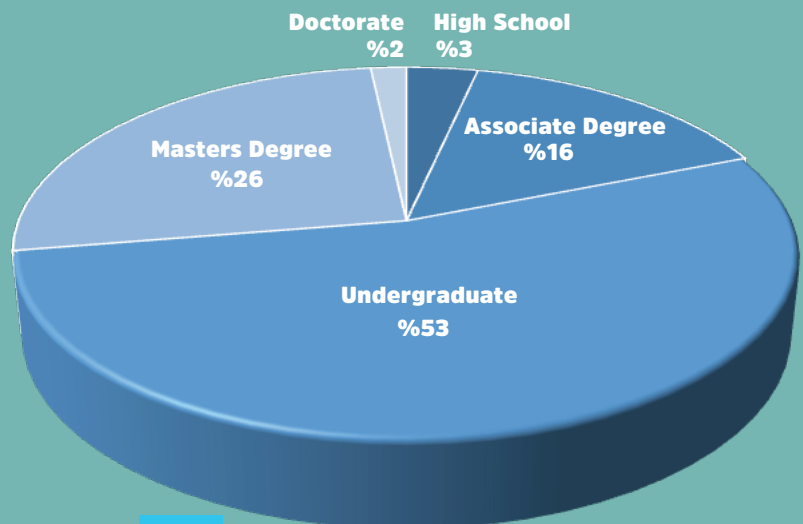
# Organization and distribution of the employees



## Çalışan Birim Dağılımı

	Undergraduate	High School	Associate Degree	Graduate	Doctorate	Total
Administrative	5	2	7	4	-	18
Financial	2	-	-	-	-	2
Technical	24	-	2	15	1	42
General Total	35	2	9	19	1	62

## Distribution of the Employees by Degree





# / Product Family

## **Submarine Systems**

Torpedo Countermeasure System  
Sonar Beacon System  
Breathing Air Monitoring System

## **Sonar Systems**

ECHORIUM Diver Detection Sonar  
Wake Detector  
SMARTIUM Underwater Detection and Classification System  
SENSIUM Acoustic Detection and Monitoring System  
Sonar Fish Test and Measurement System

## **Naval Mine System**

MALAMAN Smart Sea Mine

## **IT Systems**

Ship Integrated Information System

## **Underwater Communication Systems**

TB-SH 05 Underwater Telephone  
UWaT Digital Underwater Telephone  
Emergency Underwater Telephone  
Software-Based Underwater Telephone

## **Underwater Detection and Positioning Systems**

Detection and Positioning System  
Offshore and Inshore Weapon Scoring System

## **Software Based Products**

Mine Warfare Data Center Software  
SORTAM Sonar Performance Modelling Software  
Self-Noise Measurement Software  
Acoustic Signal Generator Software

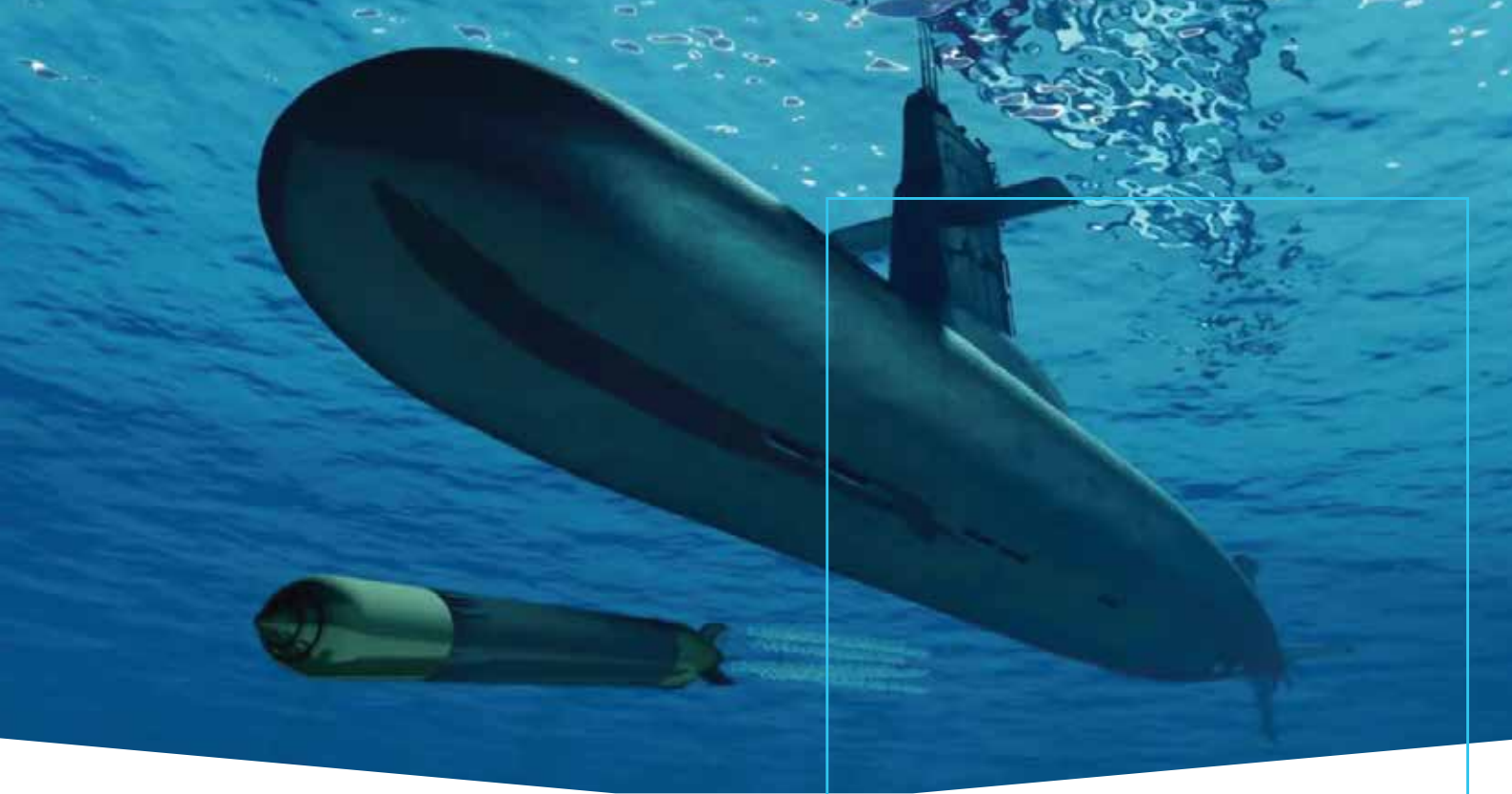
## **Civil Sector Products**

Manual Guidance System for Tractors  
SMARTIUM CLEAN Autonomous Marine Cleaning Vehicle  
SMARTIUM BLUE Sea Water Quality Measuring System

## **R&D Projects**

Development of Acoustic Target Detector  
Development of SuGa Underwater Surveillance System  
Development of Automatic Guidance System for Tractors  
Development of Algae Cleaning System





**Submarine**  
Systems

Submarine  
Systems



# Submarine Systems

## Torpedo Countermeasure System

### General Features

The Torpedo Countermeasure System is a subsystem of a combat management system used to detect, classify and position torpedoes when a submarine is under torpedo threat, and to decide on the countermeasures and tactical maneuver plans to be employed. This solution incorporates all end-user processes, including training and testing, in the ground support system and on the submarine.

One component of the system runs in the submarine and performs detection, classification, location / DCL, and decision support functions. This component also provides a human-machine interface compatible with the submarine's command and control consoles. A major difference from its counterparts is that this system detects, classifies, and locates the torpedo attacking the submarine through its DCL function, in addition to its countermeasure function against torpedo threats.

The ground support components of the Torpedo Countermeasure System are used to counter the torpedoes with the most effective tactics and to determine the optimal jammer/decoy deployment configuration. For this purpose, it provides a medium for the development of acoustic environment simulation and engagement models. Necessary parameters are entered into the decision support software and appropriate tactics are uploaded to the system via ground support components. In addition, the Torpedo Countermeasure System includes countermeasure interface simulators used for command and control, launcher testing, and training.

### Technical Specifications

- Tailored to fit and integrate with the end user's preferred submarine command and control system
- Advanced and effective torpedo detection, classification and localization capability
- Determination of countermeasures and ship maneuvers as part of the decision support function
- Ability to operate with expandable, static and mobile acoustic jammers and decoys
- Advanced and user-friendly operator interface
- Simulation and modeling tools for torpedo detection and countermeasure planning
- Acoustic environment modeling and simulation
- Modelling and simulation of torpedo countermeasure jammer/decoy units, and submarines
- Torpedo countermeasure planning and effectiveness analysis
- Test and training modules
- Secure and expandable system architecture with back-up function

### Reference/User

Naval Forces Command (6 x Reis Class Submarine)



# Submarine Systems

## Sonar Beacon System

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### General Features

The Sonar Beacon System enables the location of a submarine in an emergency during search and rescue operations. Developed by KoçSavunma in full compliance with NATO standards, this system transmits automatic or manual emergency sonar signals to detect and locate the current position of a submarine via nearby rescue platforms.

### Technical Specifications

- Activated automatically by contact with water
- Activated manually by operator
- Operates at incident depth and under torpedo impact
- Complies with STANAG 1298 & STANAG 1382 standards
- Transmits sonar signals at 9 kHz and 37.5 kHz or both frequencies simultaneously
- Operates for more than 850 hours while transmitting on both frequencies
- Shows transmitting frequency/ frequencies on the screen.
- Built-In-Test (BIT) mechanism for testing batteries and system operability
- 5-year maintenance-free battery, depending on usage
- Military-grade design for high reliability

### Reference / User

Naval Forces Command (6 x Reis Class Submarine)





# Submarine Systems

## Breathing Air Monitoring System

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### General Features

The Breathing Air Monitoring System is equipped with a sensor that detects and analyzes the gases in the submarine's living spaces during surface cruising, snorkeling, underwater cruising, or while in port. The system automatically alerts the crew when airborne gases reach levels that threaten their health.

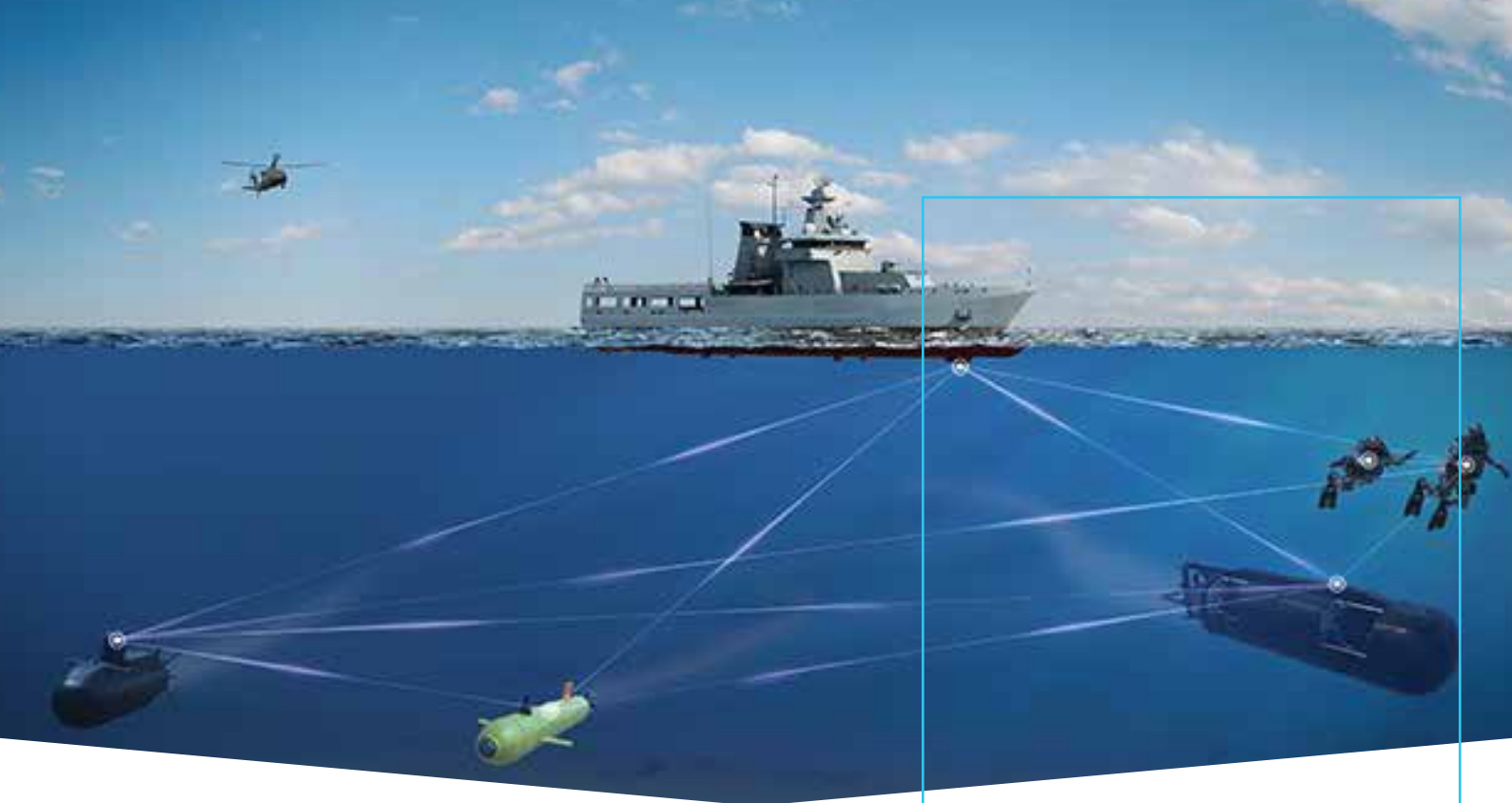
The Breathing Air Monitoring System can be used on military naval platforms and in all enclosed military and civilian areas where gas measurement is required. It is possible to set the gases to be monitored and customize the screenshots according to the user's needs.

### Technical Specifications

- The sensor subsystem provides continuous measurement.
- The analysis subsystem measures samples taken from 18 different points on the submarine.
- The system transmits status data to various systems on the boat.
- It is tested in accordance with the environmental conditions of submarine platforms.
- MIL-STD-810F Temperature, Humidity, Thermal Shock
- MIL-S-901D Shock
- MIL-STD-461E EMC
- DOD-STD-1399 Magnetic
- Analysis subsystem can perform automatic calibration
- The sensor subsystem takes measurements with sensor arrays in 10 different compartments of the submarine.
- The system operates automatically.
- The system monitors hydrogen, oxygen, carbon dioxide, carbon monoxide, hydrogen sulfate, chlorine, and refrigerant gases (R134A and R404A), etc., and provides alarms when thresholds are exceeded.

### Reference / User

Naval Forces Command (6 x Reis Class Submarine)



# Sonar Systems

**Sonar  
Systems**



# Sonar Systems

## ECHORIUM Diver Detection Sonar

### General Features

ECHORIUM DD70 and PDD70 Diver Detection Sonars, are a versatile system that caters to ensure the security of high-value units, facilities, docked or anchored ships, and fixed platforms against underwater threats against infiltration that can be made from underwater by elements such as divers, manned and unmanned small transport vehicles, etc.

### Areas of Use:

- CNI facilities, energy terminals, LNG terminals, nuclear power plants
- Offshore Oil Platforms
- Commercial ports
- Naval or civilian vessels (cruise ships, super yachts)
- Specially protected underwater areas
- Maritime borders
- Naval bases
- Coastal residential areas
- Coastal military installations and airports
- VIPs at sea

### Technical Specifications

- Detect approaching targets at long range
- Reliably detect, track and classify targets at ranges up to 1,000 meters with a single sonar head
- Portable software that runs on any desktop or laptop computer
- Temporary, permanent or portable installation
- User-friendly interface that allows operators with no sonar knowledge to use the system
- Automatic alarm that sounds when an intrusion is detected
- Provides real-time mobile and wireless imaging for security forces
- Very low false alarm rate
- Remote imaging from anywhere in the world
- Suitable for large or small coastal installations
- Short delivery and installation time

### Reference / User

TÜPRAŞ (İzmir/Aliağa ve İzmit Refineries)  
Naval Forces Command





# Sonar Systems

## Wake Detector

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### General Features

KoçSavunma has developed, qualified and launched mass production of the Wake Detector for the AKYA Heavy Torpedo Project.

This high-frequency sonar system detects the wake, which consists of air bubbles left behind by ships, with the acoustic signals it produces, processes the bubbles, and enables the torpedo to proceed to the target.

### Technical Specifications

- Confidential Information

### Reference / User

Naval Forces Command, ROKETSAN (AKYA Heavy Torpedo Project)



# Sonar Systems

## SMARTIUM Underwater Detection and Classification System

### General Features

SMARTIUM, the Intelligent Underwater Detection and Classification System, consisted of the entire sensor block, safety and locking systems, and central processing unit of the MALAMAN Smart Sea Mine. The system detects and identifies the target using acoustic, magnetic and pressure sensors, and fires the mine automatically or based on user-defined criteria.

The system provides solutions for projects requiring underwater surveillance, detection, identification and classification functions for military and security purposes, thanks to its data recording and instant data transmission capacity.

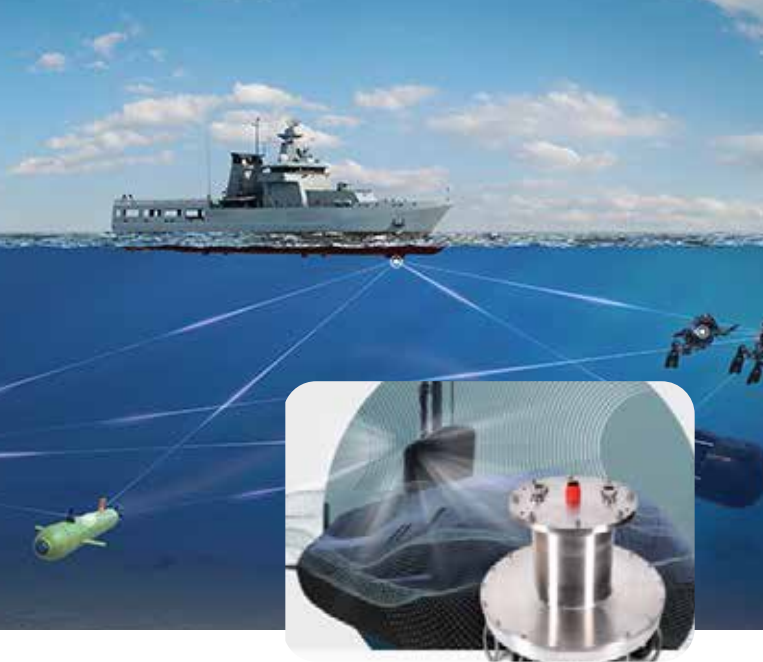
### Technical Specifications

- Confidential Information.

### Reference / User

Confidential Information.

# Sonar Systems



## SENSIUM Acoustic Detection and Monitoring System

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### General Features

Designed and developed by KoçSavunma, the SENSIUM Acoustic Detection and Monitoring System is a search and rescue system that operates at various depths. It detects the signals transmitted by submarines in distress and downed aircraft, and locates the source of the signals, enabling search and rescue units to be quickly directed to the location of the signals.

### Technical Specifications

- Digital map support
- High accuracy ( $\pm 2^\circ$  bearing accuracy)
- Maximum operating depth: 150 meters
- Detection frequency range: 5 kHz-45 kHz
- Detection distance: 10 m-9,000 m
- Hydrophone Array: 360°, array of 8 omnidirectional hydrophones
- Shock Resistance
- Carriage box
- Operable up to Beaufort Scale 3

### Reference / User

Naval Forces Command (2 x surface ship)





# Sonar Systems

## Sonar Fish Test and Measurement System

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### General Features

The Sonar Fish Test and Measurement System was developed as part of the National Modernization Project to determine whether the verification and acceptance criteria of acoustic systems are met during the sea trials of Reis Class submarines being built under the Turkish Naval Forces New Type Submarine Program.

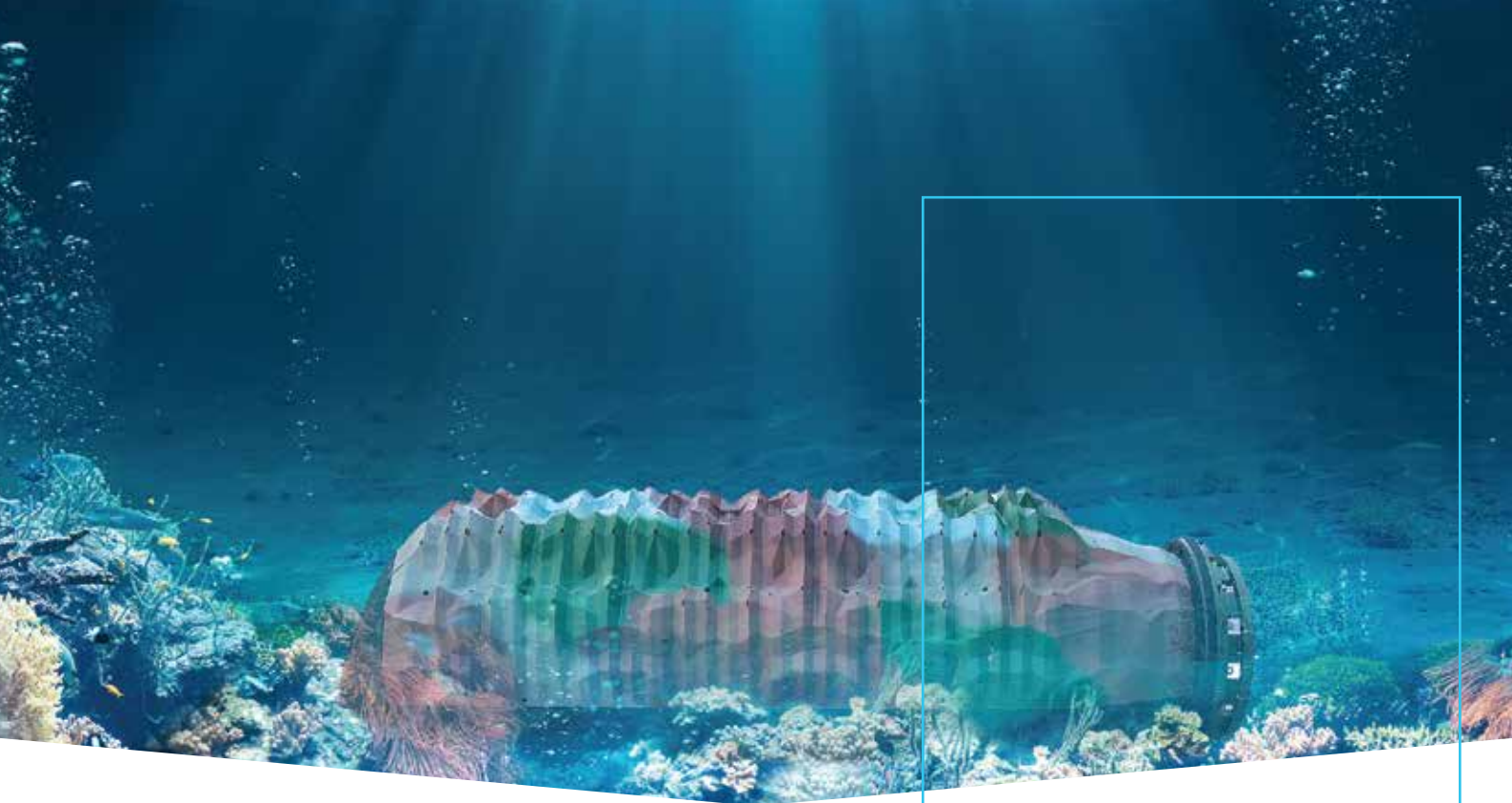
This system platform is towed by a surface ship and mimics the signals that any sonar system can produce. It is used in the sea trials of all Reis Class submarines and also provides various opportunities as an invaluable training aid in basic CASEX training to achieve the training objective in a cost-effective manner.

### Technical Specifications

- Produces variable and preset broadband acoustic signals for functional and performance testing of sonars.
- Simulates characteristic acoustic structures of platforms such as gunboats, torpedoes, etc.
- Repeats active pulses of tested sonars to mimic Doppler and echo extension
- Changes the backup depth of the transducer block (fish) to avoid underwater environmental effects
- Communicates with the tested submarine via the system's underwater telephone
- Provides cost-effective, customized, and efficient training for sonar personnel

### Reference / User

Naval Forces Command (New Type Class Submarine (Reis Class) Project)



# Mine Systems

**Mine**  
Systems



# Mine Systems

## MALAMAN Smart Sea Mine

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### General Features

MALAMAN is an intelligent sea mine designed as a cutting-edge, adaptable and scalable component. This mine is equipped with acoustic, magnetic, and pressure sensors that allow it to detect its targets from great distances and depths, as well as detection and identification capabilities. The mine can be deployed from a variety of platforms including aircraft, surface warships, submarines, UAVs and UUVs. The mine also has visual and acoustic stealth capabilities that blend into the seabed environment, and it carries plastic-bonded underwater explosives that make it resistant to rapid heating and munition impact.

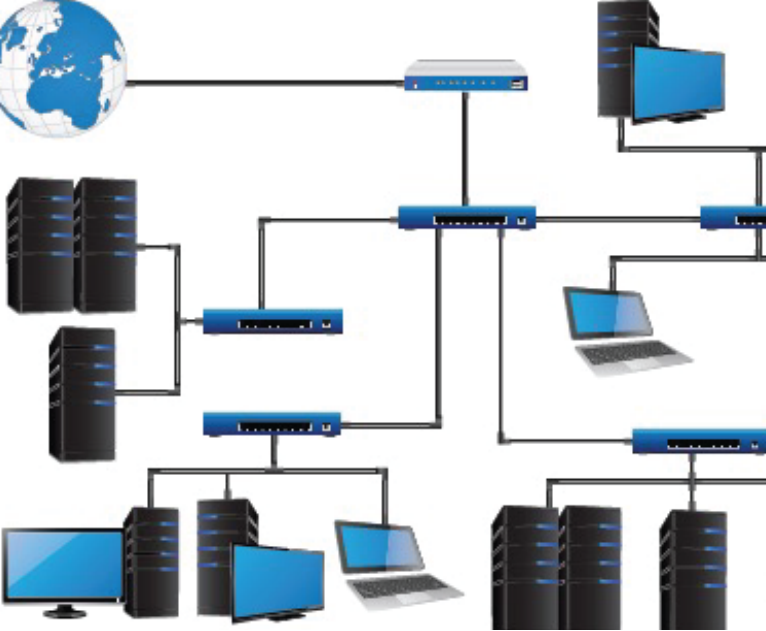
MALAMAN Smart Sea Mine is jointly developed by TÜBİTAK SAGE and MKE A.Ş.

### Technical Specifications

- Mine Type: War and Training Sea Mine
- Deployment Platform: Warship, Submarine, Aircraft (adapted for unmanned platforms)
- Sensor Types: Acoustic, Magnetic, Pressure
- Operational Depth: > 100 meters
- Weight: >600 kg.
- Diameter: 533 mm
- Length: > 1800 mm
- Explosive type: Plastic-bound underwater explosive
- Resistance -1: Rapid heating (Type V)
- Resistance -2: Munition impact (Type IV)
- Operating Temperature: -2.5°C to +36°C

### Reference / User

Naval Forces Command  
Presidency of Defense Industries  
TÜBİTAK SAVTAG



# Mine Systems

## Ship Integrated Information System

### General Features

Ship Integrated Information System (GEBIS) provides military-grade in-ship information networks for surface and underwater platforms. It provides secure connection points to the Internet and Intranet networks worldwide, as well as the local information network within the ship. The system provides a reliable, fast, and paperless shipboard information operating environment. The infrastructure is compatible with TEMPEST. Unique solutions are developed with a special system design based on user needs and project requirements.

GEBIS is an integrated system consisting of Commercial Off-The-Shelf (COTS) products. Upon request, the specified critical units are provided in accordance with the MIL-STD-810G standard. GEBIS structure supports all hardware units and separate networks. It connects the installed ship's local networks with existing coast-to-ship and ship-to-ship network connection points and with TK-NET, NATO, and mission networks via satellite communication infrastructures. It is equipped with cables and interconnection hardware for these connections.

### Technical Specifications

- Special Design Cabinets
- The Active Network Unit and Modules
- Vessel/Coast Network Connection Hardware
- Network Accelerator
- Passive Network Hardware
- Network and Server Cabinets
- Uninterruptible Power Supply
- KVM Console with Control Unit
- User Computers
- Printers and Scanners
- Data Storage Units
- Backup Units
- Power Distribution Units
- Server management software
- Video Teleconferencing System

### Reference / User

Naval Forces Command (6 x new type submarine)  
STM (2 Ukraine corvette)





# Underwater Communication System

# Underwater Communication System



# Underwater Communication System

## TB-SH 05 Underwater Telephone

### General Features

Microprocessor-controlled TB-SH 05 Underwater Telephone is a NATO-compatible communication system, produced according to the Technology Transfer Agreement under the license of TÜBİTAK BİLGEM. This telephone provides optimal communication between surface and submarine ships through acoustic waves. It is equipped with an "auxiliary unit" to communicate from a different location in a ship and an "internal communication" option that uses the ship's existing communication system.

It is equipped with two modes, namely telephone (voice) and telegraph. The communication is carried out on the selected channel frequency. Voice messages are recorded 24 hours a day and transmitted via SD card.

### Technical Specifications

- Communication Channels Frequency Range: - Upper Side Band: 2.000-40.000 Hz  
- Lower Side Band: 5.000-43.000 Hz
- Number of Adjustable Channels: 3-6 Channels: NATO (8.087,5 Hz), National (3.500 Hz)
- Adjustable Output Power: 10 W (Near), 50 W (Middle), 100 W (Distant)
- Distance Measurement Mode: Fully Automatic
- Maximum Distance Measurement Range: 30.000
- Telegraph Mode Features: Transmitting – Receiving with Morse Code
- Applied Standards: STANAG 1074, STANAG 1382

### Reference / User

Naval Forces Command, (6 Surface Ships)  
DEARSAN (Turkmenistan, Nigeria Patrol Ships)



# Underwater Communication System



## UWaT Digital Underwater Telephone

### General Features

KoçSavunma is in the final stage of developing a new generation underwater telephone under the UWaT project with the technical support of TÜBİTAK BİLGEM. This phone supports digital audio and data formats. UWaT Digital Underwater Telephone will be offered for service in the second half of 2024 and will make the company one of the four players in this field in the global market.

The UWaT will provide data transfer capability, which can be defined as underwater SMS communication. As a result, naval forces and friendly navies will have the infrastructure necessary to implement new concepts that allow friendly submarines and surface ships to recognize each other during naval operations.

### Technical Specifications

- Telephone and Telegram Communication
- STANAG-1074 and STANAG-1382 compliant
- Three stage adjustable output power
- Digital Data Communication
  - STANAG 4748 (JANUS)
  - STANAG 1481 (IFS)
- Unique user interface design
- Internal test function
- Detection of SONAR beacon (pinger) signals
- Sonar Silencing Interface
- Emergency Channel Listening
- Audio recording and listening
- Data transfer to/from external storage unit
- Upgradeable software
- Modular design
- Unidirectional or bidirectional transducer transmission options
- User interface language selection



### Reference / User

Naval Forces Command (MİLGEM 6,7,8,9,10,11 ve 12 ships)



# Underwater Communication System

## Emergency Underwater Telephone

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### Genel Özellikler

The Emergency Underwater Telephone is used when the submarine cannot surface and cannot supply power to the communication systems (or when the submarine's limited power must be reserved for other systems). The system provides various operating modes such as telephone, telegram, pinger, and can operate for very long periods without interruption by means of selectable power levels.

It can operate on user-selected frequencies as well as NATO standard communication frequencies. In addition to its battery, the phone is also powered by the ship's circuit. It is equipped with an SOS function for use in emergencies.

In addition to submarines, this equipment can easily be used in small boats and ships that have the power and space to integrate traditional underwater phones. In addition, its scalable and digital-based infrastructure allows the phone to be adapted for non-emergency use (such as tactical communications) on large ships and submarines.

### Technical Specifications

- Transmit - Receive
- Pinger signal (transmits SOS or Morse code signals)
- Powered by submarine supply or own battery
- Standard underwater telephone system carrier frequency according to NATO STANAG 1074
- Transmits on at least three different frequencies according to NATO STANAG 1298
- Transmits and receives 360 degrees horizontally
- Power output up to 100W

### Reference / User

Naval Forces Command, (Preveze Class Submarines)





# Underwater Communication System

## Software-Based Underwater Telephone

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### General Features

The Software-Based Underwater Telephone utilizes the transducers of existing surface ship and submarine sonar systems. The system provides underwater communications through interfaces on the sonar or command control system console, using the acoustics of the underwater environment.

### Technical Specifications

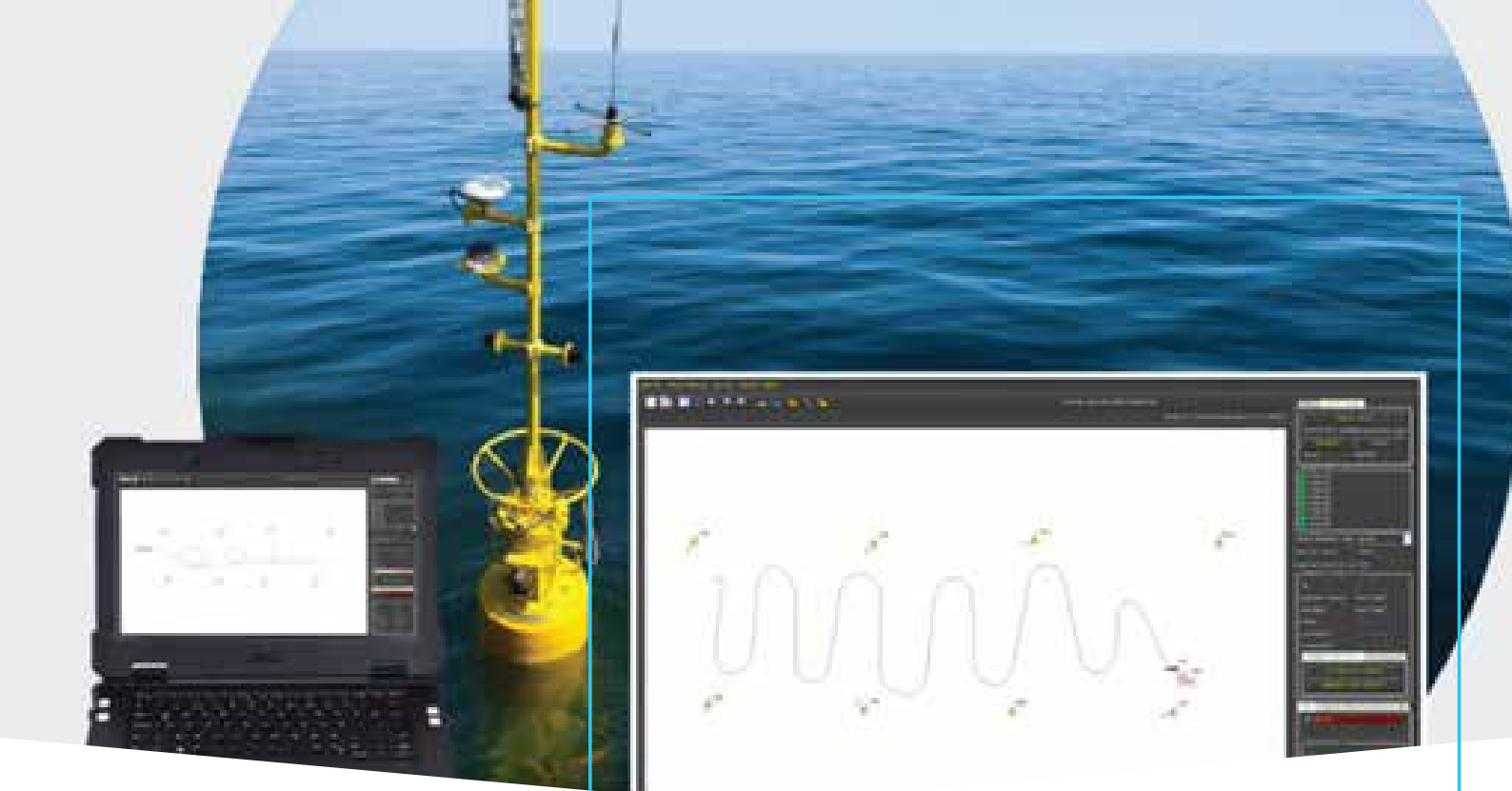
- Single Side Band (TYB) Amplitude Modulation
- Telephone function: Upper Side Band or Lower Side Band
- Telegram function: Upper Side Band
- Transmits audio signal
- Audio band range used in telephone function 300 - 3000 Hz
- Up to 80 characters ASCII message in telephone mode
- Converts ASCII characters to Morse code

### Reference / User

Naval Forces Command, (Müren SYS Modernization)

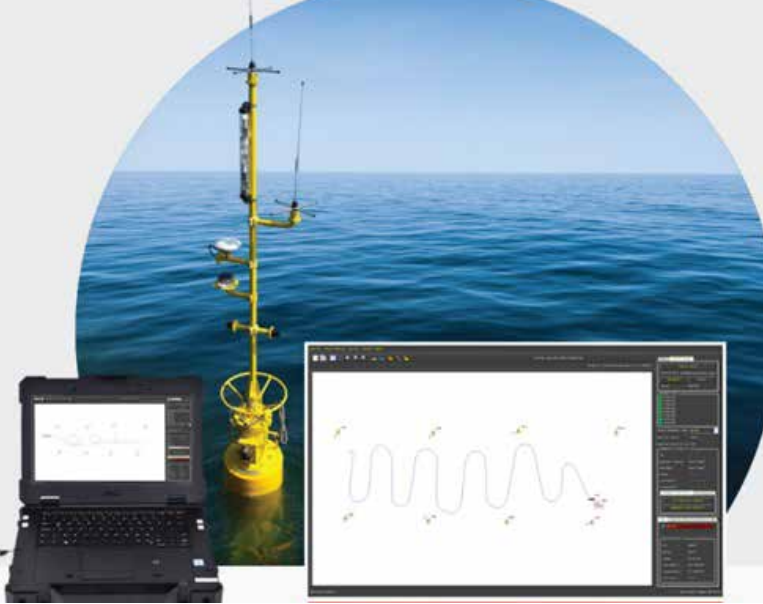
2 Ukraine Corvettes

2 Pakistan Corvettes



# Detection and Positioning Systems

# Detection and Positioning Systems



# Detection and Positioning Systems

## Detection and Positioning System

### General Features

Detection and Positioning System is used for testing and qualification of unmanned underwater platforms navigating at high speed (>40 kts). This system allows command and control officers to monitor unmanned underwater platforms in real-time and in a 3-axis plane with a high positioning accuracy of less than 1 meter. The underwater behavior of the platforms is analyzed and used for testing and qualification purposes.

A pinger system that transmits reference acoustic signals is installed on the platforms, which can move underwater at high speed to accurately monitor their position. The buoy detects the reference acoustic pulse signal periodically transmitted by the pinger installed on the underwater platforms.

### Technical Specifications

- Test area size: 120 km<sup>2</sup>
- X and Y Plane and Depth Positioning Accuracy <1m (RTK solution)
- Positioning Method: Synchronous and asynchronous with GPS
- Number of buoys: 5 to 20
- Pinger frequency: 8 - 15 kHz (customizable to different frequencies)
- Maximum time at sea on a single charge 4 days
- RF wireless communication range: 20 km
- The number of platforms for simultaneous surveillance is 4

### Reference / User

ROKETSAN (AKYA Torpedo development and verification activities)

ROKETSAN (Ongoing torpedo development activities)

# Detection and Positioning Systems

Offshore and Inshore

## Weapon Scoring System

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### General Features

The Offshore and Inshore Weapon Scoring System provides a solution for scoring and analyzing surface firings. During firing tests, the system uses intelligent buoys to accurately detect the impact points of ammunition on the water. The sensor on each buoy detects the sound generated underwater when the ammunition hits the water. This data, along with the buoy's location, is transmitted to the measurement station. Here the data collected by the sensors is evaluated, the munition impact point is determined and displayed to the operator.

The system is used in the development and verification of guns, guided munitions, rockets, and fire control systems, and also provides real-time precision measurement services for firing range training.

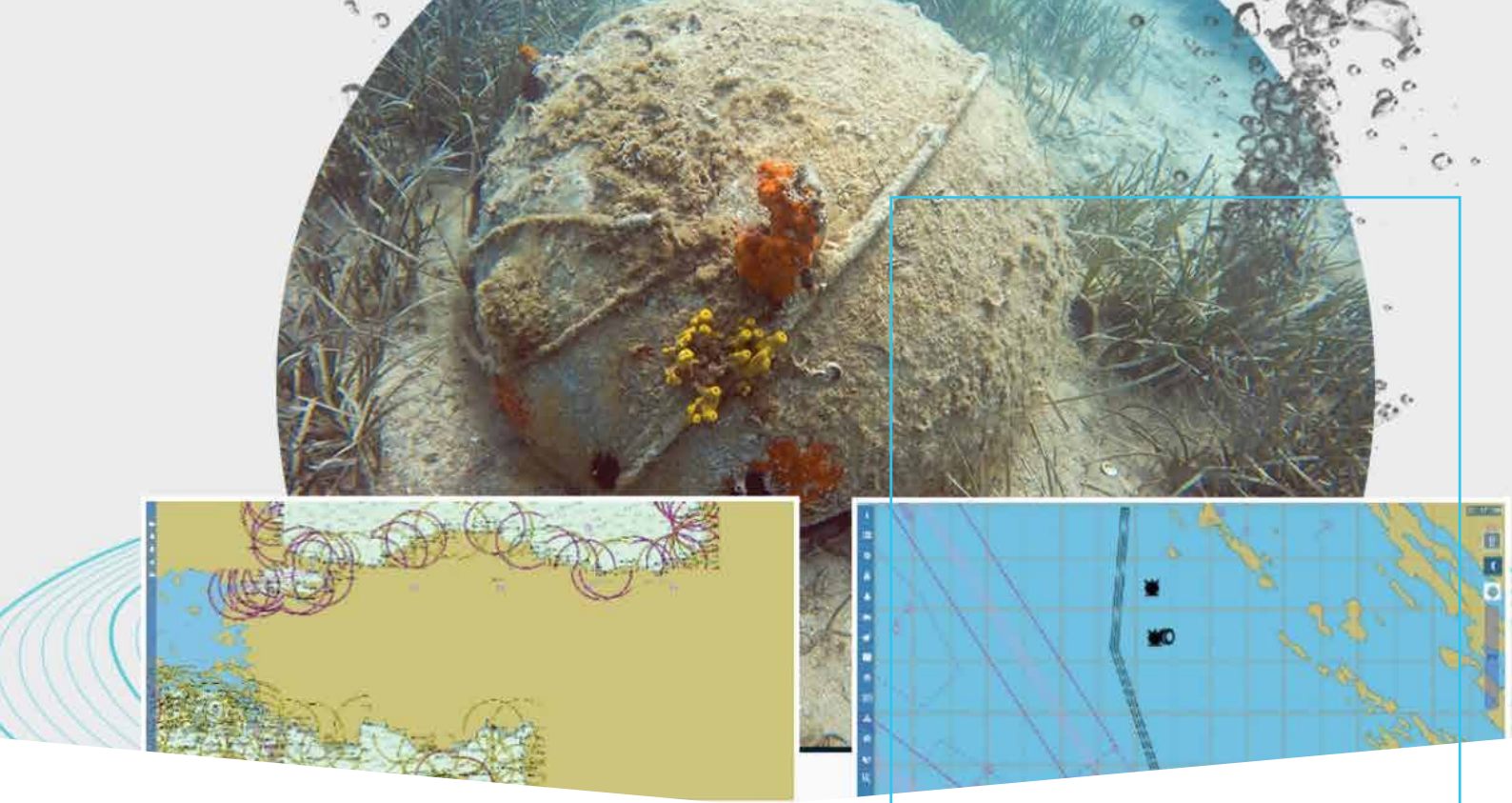
### Technical Specifications

- Detects ammunition impact points with 6 smart buoys for shots fired within a radius of 1 km
- Accurately detects ammunition impact point (CEP <5 m)
- Operates on Beaufort Scale 0, 1 and 2
- Operates synchronously with GPS time
- Provides wireless communication between buoys and measuring station (via RF/GSM)

### Reference / User

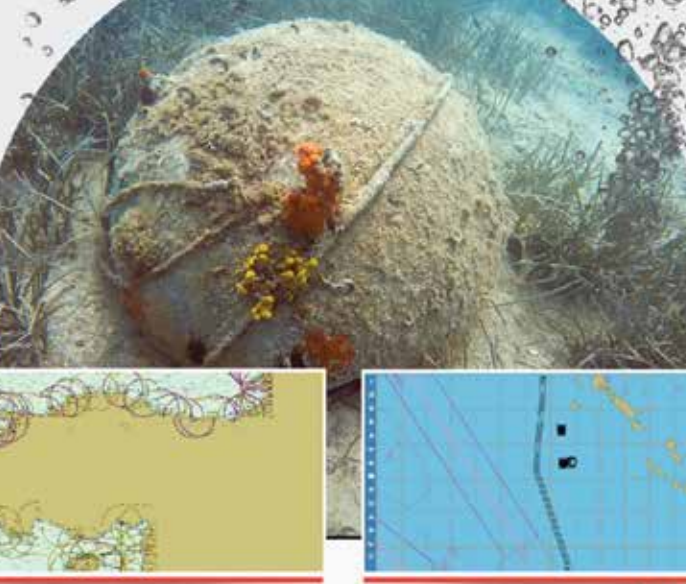
Naval Forces Command, ASELSAN (Verification activities within the modernization of the Gun Fire Control Systems of the BARBAROS Class Frigates)





**Software  
Based  
Products**

**Software Based  
Products**



# Software Based Products

## Mine Warfare Data Center Software

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### General Features

The Mine Warfare Data Center software enables the transfer and management of tactical and environmental mine warfare data between mine hunters and other data centers.

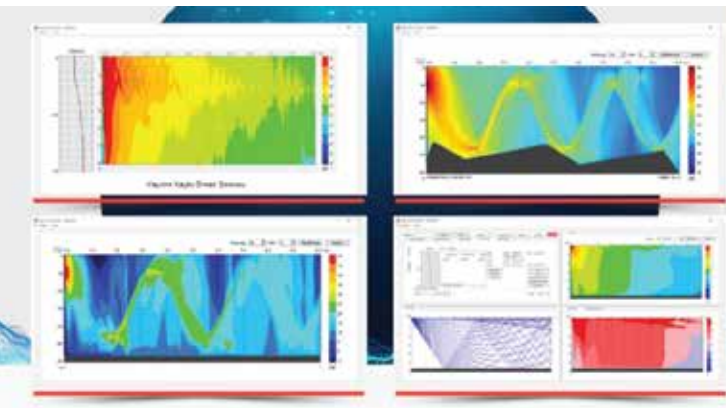
The software is ready for use by NATO countries as it is developed according to NATO standards. On the other hand, its architecture is open for customization based on different end-user requirements.

### Technical Specifications

- NATO STANAG 1116 compliant tactical data management
- Data transfer capability between NATO members and mine hunters
- Cutting-edge Geographic Information System layer support (S57, S63, AML, etc.)
- Advanced query and reporting capabilities
- Web-based, user-friendly interface running on secure networks

### Reference / User

Naval Forces Command (Mine Warfare Data Center)



# Software Based Products

## SORTAM Sonar Performance Modelling Software

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### General Features

The Underwater Environment Model (SORTAM) is a software-based precision modeling tool that displays the "Tactical / Estimated Sonar Range". The tool models the underwater propagation of acoustic signals from any active sonar or target using propagation models. SORTAM can model the performance data of both active and passive sonar systems with high fidelity, depending on the environmental conditions in which they operate.

SORTAM can operate independently of any other system. It displays the results of the propagation model with easy-to-use graphical user interfaces (GUI).

SORTAM can be adapted to different user needs thanks to its open architecture and modular structure.

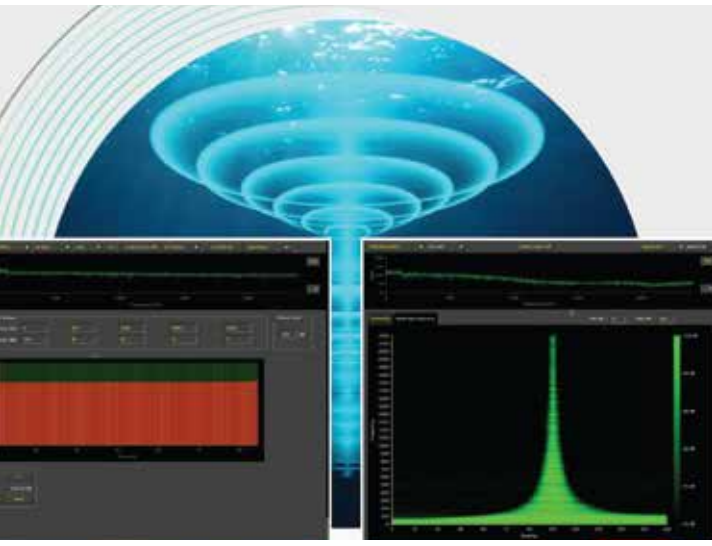
### Technical Specifications

- Provides mechanism for scenario field generation
- Processes multiple sound velocity profiles as a function of horizontal distance
- Identifies Beaufort scale sea state as a function of field distance
- Identifies seafloor and surface structure from reflection levels as a function of field distance
- Displays images of the propagation losses calculated by the acoustic environment model in the defined underwater area as a result of running the ray tracking model, depending on the distance and environment.
- Simulates the propagation of rays emitted from an acoustic source at specified angles.
- Calculates and displays the signal level reached by the receiver of the pulse reflected from an object in the field.
- Finds possible detection percentages depending on the calculated SNR (signal-to-noise ratio) value and the sonar's detection threshold.
- Shows values for reflection and noise caused by the sea surface, bottom, and volume of water.

### Reference / User

4 Pakistan Corvettes

2 Ukraine Corvettes



# Software Based Products

## Self-Noise Measurement Software

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### General Features

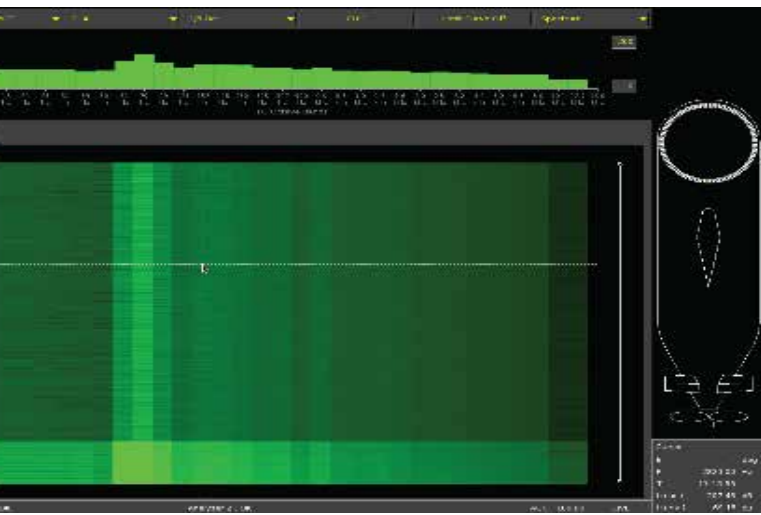
A series of sonar subsystems are found among KoçSavunma's unique and effective solutions, including Self-Noise Measurement Software. This tool analyzes data from different sonar sensors of underwater platforms in real-time, online and offline. In this way, self-noise information of the platform is obtained and analyzed.

This tool is used in the indigenously produced Integrated Underwater Combat Management System (MÜREN) Preveze Class application. It is also used on various platforms equipped with sonar sensors. The tool can be adapted to different platforms and sonar sensors in a short time thanks to its modular structure.

### Reference / User

Naval Forces Command (MÜREN Preveze)





# Software Based Products

## Acoustic Signal Generator Software

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### General Features

The Acoustic Signal Generator Software transmits real-time acoustic signals to the front electronic units of various sonar sensors of underwater platforms, according to the scenarios created. In this way, the tool ensures that the signal processing algorithms and command and control software of the platforms are verified and qualified in the ground-based test system and in port tests.

This tool is used in the indigenously produced Integrated Underwater Combat Management System (MÜREN) Preveze class application. It is also used on various platforms equipped with sonar sensors. On account of its modular structure, the tool can be adapted to different platforms and sonar sensors in a short time.

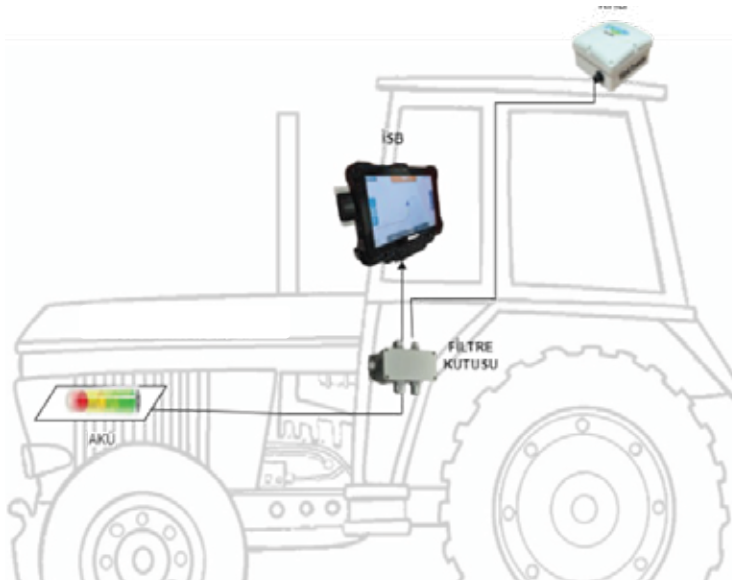
### Reference / User

Naval Forces Command (MÜREN Preveze)



# Civil Sector Products

# Civil Sector Products



# Civil Sector Products

## Manual Guidance Systems for Tractors

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### General Features

The electronic control unit determines the tractor's position using global positioning systems and processes the position data. As a result, this system allows steering in the field at regular intervals, quickly and with centimeter accuracy, regardless of weather conditions (day/night).

While the tractor is moving, the operator manually steers to minimize any deviations from the planned route, which are displayed on the screen,

This system provides an economical solution for planting, spraying and fertilizing during field preparation.

### Technical Specifications

- ENS 0310 N compliant
- IMU: Three-plane accelerometer and gyroscope
- Screen: 10" 1280x800 pixels, 1000 nits
- Optional distance measurement on the working screen
- Change area measurement unit
- Automatic creation of headland with a specific offset based on the field boundary
- Specify the offset value of the headland with the accuracy in centimeters.
- Navigate the processed area on the work screen
- Configurable KHB
- Local software
- Automatic update

### Reference / User

TürkTraktör



# Civil Sector Products

## SMARTIUM CLEAN Autonomous Marine Cleaning Vehicle

### General Features

Smartium Clean marine cleaning vehicle operates autonomously or remotely to clean solid debris on the water's surface, natural deposits, formations such as slime, and spills such as fuel and oil along a predetermined route.

The vehicle's collision avoidance sensors enable safe operation in environments such as harbors and marinas. When operated by remote control, the operator can monitor the images sent by the built-in camera. The night vision capability of this camera allows Smartium Clean to operate 24 hours a day, taking photos and recording videos during operation.

As an environmentally friendly vehicle, Smartium Clean runs on rechargeable batteries and does not use fossil fuels.

### Technical Specifications

- Dimensions (width x length x height) 850 x 950 x 530 mm
- Vehicle weight, approximately 52 kg
- Battery capacity: 3 hours
- Speed: Maximum 2 knots
- Operating Conditions: Up to Beaufort Scale 2
- Propulsion System: ECS controlled motor
- Surface cleaning capacity: 1,000 m<sup>2</sup>/hour (at 1 knot average speed)
- Control distance (open area): 1.000 m
- Control distance (inside marina etc.) 500 m
- Control: Camera-supported remote control
- Autonomous operation capability
- Garbage collection equipment: Easily changeable as needed
- Battery: Rechargeable or plug-in (removable) battery
- Collision Avoidance System: 4 ultrasonic sensors prevent front and rear collisions
- Body Material: Composite
- Complete sealing including superstructure
- Wave and rain protection
- Stays afloat if punctured
- Propeller protection
- Modular design: Can be customized for different applications

### Reference / User

SETUR Marinas (9 Marinas)  
Fethiye Municipality





# Civil Sector Products

## SMARTIUM BLUE Sea Water Quality Measuring System

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### General Features

Smartium Blue is an indigenous and nationally developed measurement and tracking system that monitors oceanographic and atmospheric conditions in the oceans on a 24/7 basis. The system displays data through web-based interfaces and alerts the user when thresholds are exceeded.

Smartium Blue can operate autonomously on solar power and batteries. It collects data with sensors on remotely accessible "smart" buoys equipped with GPS. The collected data is recorded in a ground-based database and made available to users. Users can access data details in their area of interest and set alarms using separate session interfaces.

### Areas of Use

Smartium Blue can be used by civil administrations (Governors, Municipalities, etc.) that have a coastline and wish to be informed about the pollution in the area, by bodies with public health management responsibilities (Ministry of Health, Ministry of Agriculture, etc.), port and marina management, fish farms, refineries and factories and plants that discharge into the sea, river or lake.

### Technical Specifications

- Flexible architecture
- Capable of retrieving data from any depth
- GPS
- Detection of pollution sources by camera
- Generate your own energy
- Modular and interchangeable structure
- Store data in the cloud
- Data Processing

### Reference / User

Fethiye Municipality

Ministry of Environment and Urbanization

Tübitak MAM



# Civil Sector Products

## Marina Boat Tracking System

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### General Features

The Marina Boat Tracking System allows real-time tracking of the number of boats in a marina, their location in the marina, and in the inbound waters, whether they are in their reserved area or not, and whether they are cruising or not.

### Technical Specifications

- LoRa communication technology
- Boat Tracking Device (TTC)
- Low power consumption
- Stores data in the cloud

### Reference / User

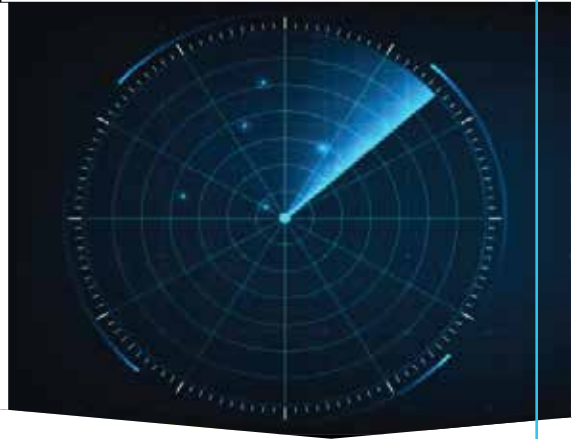
SETUR Marina



# Civil Sector Products

UNMANNED TECHNOLOGY  
FOR A SUSTAINABLE FUTURE!

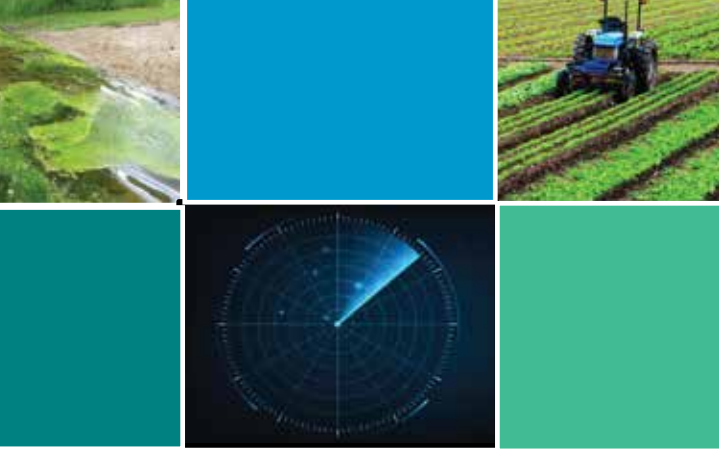




# R&D Projects

# R&D Projects





# R&D Projects

## Acoustic Target **Detector**

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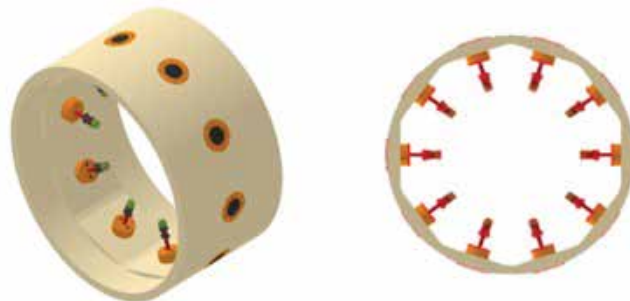
### General Features

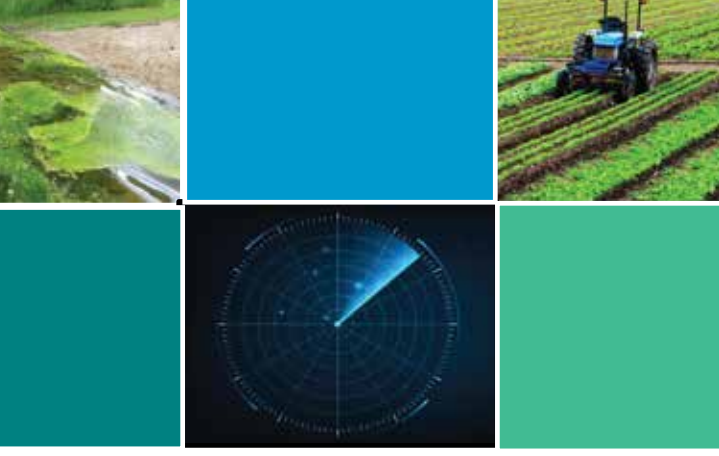
The Acoustic Target Detector development project is a sonar system that employs active sonar principles to automatically detect, through its transducers, the approaching surface and underwater platforms at a certain distance and transmits the detection data and the results of the physical and characteristic analysis to the mission computer of the underwater platform, where it operates with integration, acting as an acoustic stopper.

### Reference / User

Confidential information.

It is an R&D project in progress for use in underwater platforms.





# R&D Projects



## SuGA Underwater Surveillance System

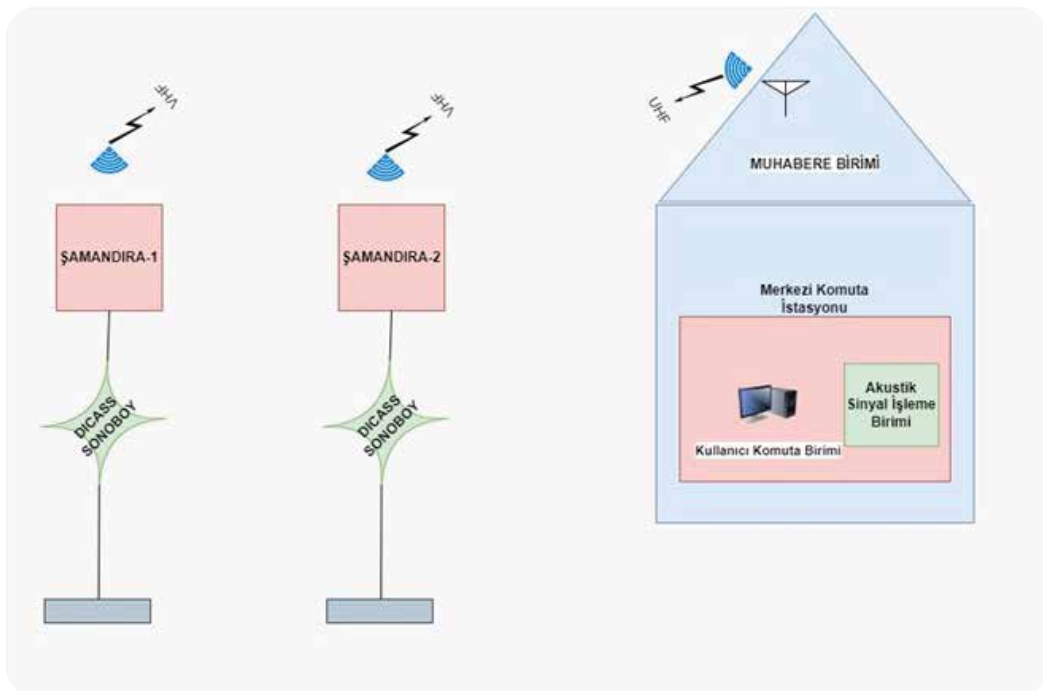
### General Features

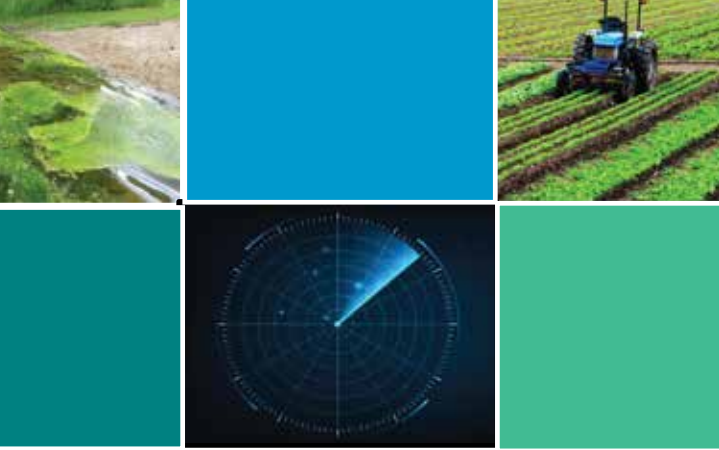
The Underwater Surveillance System (SuGa) is being developed for use in "network-centric anti-submarine warfare in littoral waters" for the following purposes

- Perform underwater surveillance with active sonar networks within the area of operation, using the system's own energy generated by renewable energy systems,
- Produce submarine detection and tracking information,
- Transmitting the tracking information to the appropriate endpoints in the network

### Reference / User

Confidential Information.





# R&D Projects

## Automatic Guidance Systems for Tractors

### General Features:

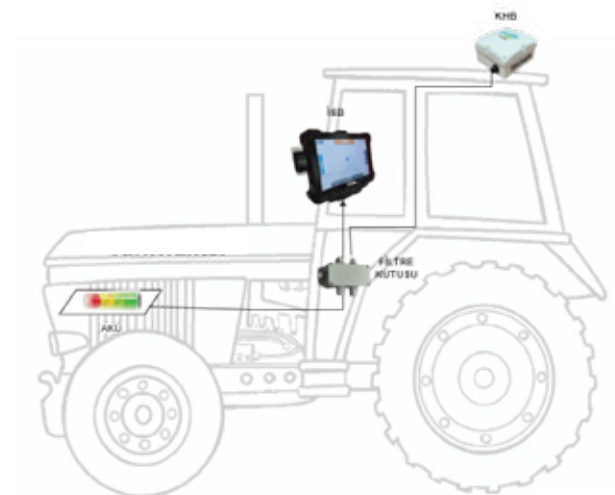
The Automatic Guidance system provides the driver with visual and/or audible warnings to automatically follow the planned tracks in the field, thanks to the steering control module.

The electronic control unit determines the tractor's position using global positioning systems and processes the position data. As a result, this system enables steering in the field at regular intervals, quickly and with centimeter accuracy, regardless of weather conditions (day/night).

The goals of this system include increasing agricultural efficiency, minimizing operator fatigue, and saving labor and materials.

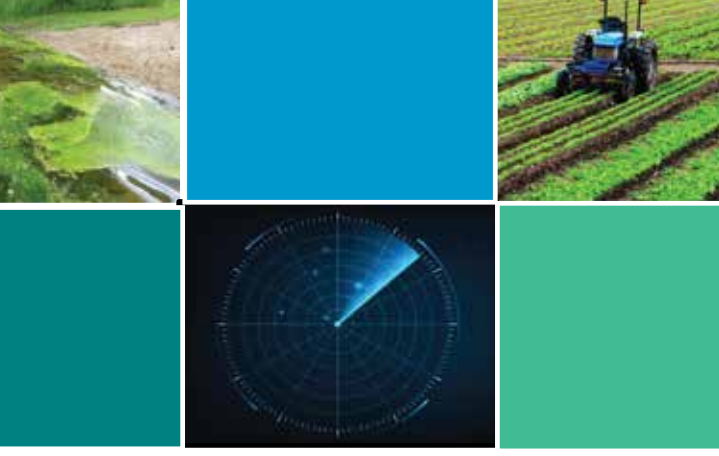
### Technical Specifications:

- ENS 0310 N compliant
- IMU: Three-plane accelerometer and gyroscope
- Screen: 10" 1280x800 pixels, 1000 nits
- Optional distance measurement on the working screen
- Change area measurement unit
- Automatic headland creation with a specific offset based on the headland boundary
- Specify the offset value of the headland with accuracy in cm.
- Navigate the processed area on the work screen
- Configurable KHB
- Local software
- Automatic update



### Reference / User

TürkTraktör



# R&D Projects

## Algae Cleaning System

### General Features

The formation of algae blooms is promoted by high temperatures, stagnant water and intense sunlight. The use of an ultrasonic algae cleaning system is the most effective and economical way to prevent biological pollution in the shortest possible time and without harming other aquatic life.

Controlled by a mobile interface, this is an environmentally friendly system that prevents algae blooms and eliminates existing algae in stagnant water.

### Areas of Use

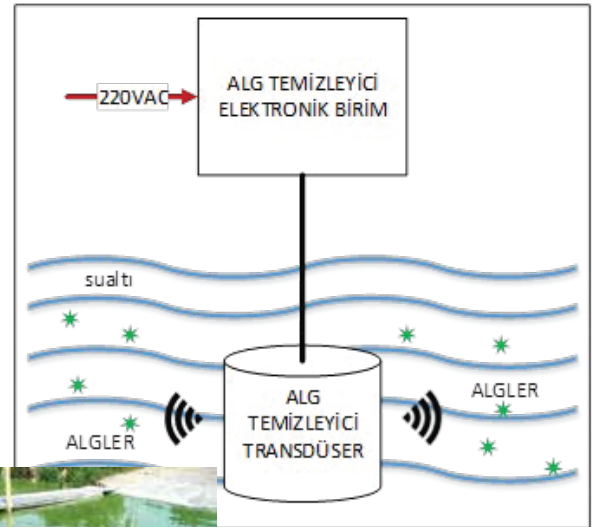
This system can be installed in industrial and irrigation reservoirs, lakes, dams, cooling ponds, aquaculture ponds, wastewater treatment plants, power plants, settling ponds, wastewater lagoons.

### Technical Specifications

- Operation on a 24/7 basis
- 220V AC
- Device controlled by mobile phone via Wi-Fi connection
- Operating frequency 20kHz-50kHz
- Period change
- Water depth: minimum 50cm
- Minimum maintenance requirement
- Safe for fish, plants and other aquatic life

### Reference / User

METU Tekno Kent  
Bursa Metropolitan Municipality







**Koç Bilgi ve Savunma Teknolojileri A.Ş.**

# MALAMAN

## Smart Sea Mine with Embedded AI

*“Destructive Guard for Blue Homeland”*



 **Koç** | KoçSavunma  
Koç Bilgi ve Savunma Teknolojileri A.Ş.



*“This product was developed in framework of TÜBİTAK’s SAVTAG-1007 Support Program”*