GEM elettronica remains committed to its mission of designing and manufacturing state-of-the-art sensors by applying the most advanced and ground-breaking technologies.



Our customers will continue to greatly benefit from our unmatched dedication to service and integrated logistic support.

AT SEA.... ON LAND... IN THE SKY...







WE STRIVE FOR ENGINEERING EXCELLENCE







QUALITY MANAGEMENT SYSTEM CERTIFICATIONS

• ISO 9001:2008 Company Quality Assurance System

• CMMI® 3 in progress Appraisal Methodology for Process Improvement

MIUR

Scientific and Technological Research

COMPANY CERTIFICATIONS



PRODUCT CERTIFICATIONS









REFERENCES

ITALY

- ITALIAN MINISTRY OF DEFENCE
- ITALIAN NAVY
- ITALIAN ARMY
- ITALIAN CARABINIERI (POLICE AND MILITARY POLICE)
- ITALIAN COAST GUARD
- ITALIAN GUARDIA DI FINANZA (CUSTOMS AND BORDER GUARD)

ABROAD

ALBANIA	GREECE	OMAN
ARGENTINA	HOLLAND	PAKISTAN
BANGLADESH	INDIA	QATAR
CHINA	INDONESIA	ROMANIA
CROATIA	ISLANDS	SINGAPORE
FAROE	LIBYA	SRI LANKA
FRANCE	MALTA	TURKEY
GEORGIA	MALAYSIA	U.A.E.
GERMANY	MOROCCO	USA
GREAT BRETAIN	NORWAY	VENEZUELA

Main current industrial and commercial co-operations

Lo	ockł	ieed	Mai	rtin
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Koll Morgen

Withead Alenia

■ Galileo Avionica

Selex ES

Oto Melara

■ Fincantieri

Elettronica S.p.A.

Oerlikon Contraves

Raytheon

Rohde & Schwarz

Intracom

Sagem

■ Page Europe

Transas

■ Telecom Italia

Kearfott



INTEGRATED LOGISTIC SUPPORT

Service Management Department

- Life Cycle Products Support
- Total Configuration Control
- Up-grade Sustainability
- Statistical Failure Analysis and Corrective Action
- Contractor Logistic Support for Preventive and Corrective Assistance.

Service & Technical Assistance Department

- National & International Service Center
- Installation, Start up & Field Engineer Center
- Repair & Test Center
- Inventory & Spare Parts Center



ILS

Technical Publications Department & System Design Documentation and Technical Data Support

- Web Operating & Technical Manual Publications
- Web 3D Intelligent Illustrated Spare Parts Catalogue
- Web Update Technical Bulletins & Training Manual
- Web Illustrated Catalogues



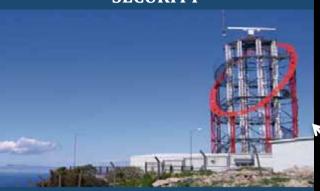
Training Department

- Technical Training Course for Maritime Electronics
- Training Center for Crew Members of Deep-sea Ship on Operating Integrated Navigation System & Vessel Traffic System
- Technical and Operating Training Course for Defence Products and Systems
- Technical and Operating Training Course for Fiber Optical and Laser Products
- Simulation System & Computer Based Training
- On the Job Technical and Operating Training





SURVEILLANCE AND HOMELAND SECURITY



A family of radar systems, IR cameras, and laser identification systems integrated into a capable and user-friendly command & control s/w to provide reliable solutions for port/coastal security, marine anti-pollution monitoring, anti-piracy and border control.

DEFENCE SYSTEMS



New generation of solid state radar, enhanced electro-optical systems, active laser imaging, WEcdis, Tactical Console, X-Band Transponders and Inertial Navigation Systems to support stringent Navy, and Armed Forces.

GEM elettronica

PRODUCTS, TECHNOLOGIES AND CAPABILITIES

GUIDANCE, NAVIGATION & POSITIONING



A wide range of advanced and precise gyrocompass, INS, IMU and guidance sensor based on strap down Fiber-Optic Gyroscope (FOG) technology.

MARINE ELECTRONICS



Marine Electronics equipment and sensor include radars and river radar systems, Ecdis, Gyrocompass and IBS, for use on merchant ships, work boat, fishing vessel and pleasure boat.



SURVEILLANCE AND HOMELAND SECURITY: TECHNOLOGIES AND CAPABILITIES

GEM elettronica is engaged in different areas of **HOMELAND SECURITY** through the design and manufacturing of modern sensors and Command & Control S/W.

GEM elettronica's dedicated engineering team has proven experience in site survey, system integration and logistics support to provide innovative solutions to government agencies, port/airport authorities and industries for the protection of critical infrastructures.

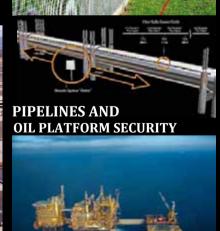
Our Company provides high-quality and reliable products and services to satisfy the needs and expectations of our customers for mission of:

- **♦ COASTAL SURVEILLANCE**
- BORDER SECURITY
- AIRPORT GROUND SECURITY
- ◆ SECURITY OF OFFSHORE OIL PLATFORMS AND OIL/GAS PIPELINES
- **♦ PERIMETER INTRUSION DETECTION SYSTEMS**
- **♦** FIRE PREVENTION SYSTEMS









PERIMETER INTRUSION DETECTION SYSTEMS



SURVEILLANCE AND HOMELAND SECURITY: TECHNOLOGIES AND CAPABILITIES







RADAR ANTENNAS

SURVEILLANCE RADAR SYSTEMS

THERMAL IMAGING







SOFTWARE SOLUTIONS & DATA FUSION



SIMULATION & TRAINING



SURVEILLANCE AND HOMELAND SECURITY: TECHNOLOGIES AND CAPABILITIES **RADAR ANTENNAS**

GEM elettronica provides advanced radar antennas series, offering a solution to every possible scenario. Our production of radar antennas is the answer to the most demanding requirements of high performances of radar detection of surface targets and are designed for vessel traffic management (IALA V-128 recommendation), coastal and harbour surveillance and airport security traffic movement.



SERIES ASX-2101 HVC / ASX-1901 HVC Triple-switchable polarisation antennas



Frequency Diversity radar antennas



SERIES ASX-2101S / ASX-1901S Radar Squintless-Beam antennas



SERIES ASX-2110 / ASX-1910 Radar inverse cosec² vertical pattern antennas



SERIES ASX-1903RC / ASX-1903 LC SMGCS radar antennas



SERIES ASX-2101 / ASX-1901 Standard radar antennas



SURVEILLANCE AND HOMELAND SECURITY: TECHNOLOGIES AND CAPABILITIES SURVEILLANCE RADAR SYSTEMS

When surveillance and security of air, land and sea, are a high priority, the family of GEM elettronica advanced radar systems can provide the best cost effective solutions with superior performance and quality and unique detection capability. Each of these full solid radar systems is designed for specific applications in the field of air and coastal surveillance, Port & Airport, border, critical infrastructure, anti-intrusion.

They can be installed on different platforms such as fixed sensor land stations, on board patrol vessels, shelterized fixed or mobile.





X-K_a DUAL BAND RADAR SYSTEMS





PERIMETER SURVEILLANCE RADAR SYSTEM



SURVEILLANCE AND HOMELAND SECURITY: TECHNOLOGIES AND CAPABILITIES THERMAL IMAGING

GEM elettronica offers a wide range of innovative gyro-stabilized optical surveillance systems for day and night use. These homeland security systems are suitable for land, mobile and sea applications and provide real-time image processing, monitoring, detection and visualization of the targets also under bad weather conditions. Within this area of activity, our Company has developed a series of payload to various different applications such as border and coastal surveillance, infrastructure protection, maritime, transportation, fire detection, OEM solutions.













SURVEILLANCE AND HOMELAND SECURITY: TECHNOLOGIES AND CAPABILITIES ACTIVE LASER IDENTIFICATION

GEM elettronica offer a cost effective Active Laser Imaging System (ALI), either as stand alone system or as integral part of a surveillance suite with IR/LLTV/Tracking radar, to dramatically enhance detection capabilities. ALI uses Eye-Safe Laser technology and offers extreme accurate resolution for positive identification of targets in day/night.



ACTIVE LASER IMAGING

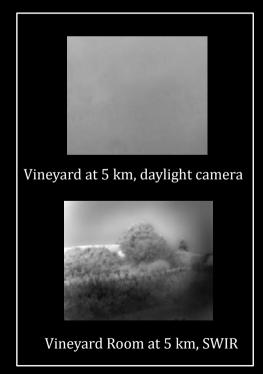


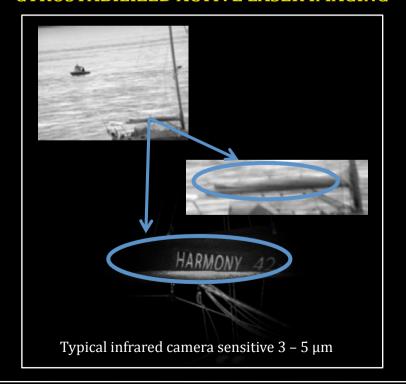
GYROSTABILIZED ACTIVE LASER IMAGING





Car at 1 km, Laser ON







SURVEILLANCE AND HOMELAND SECURITY: TECHNOLOGIES AND CAPABILITIES SOFTWARE SOLUTIONS

GEM elettronica SOFTWARE DEVELOPED IN COMPLIANCE WITH CMMI-2 BEST PRATICES (CMMI-3 IN PROGRESS)

SOFTWARE SURVEILLANCE SOLUTIONS

GEM elettronica software surveillance solutions are devoted to coastal surveillance, harbour security, water traffic management and border security based on remotely controlled sensors and redundant client/server architectures. Sophisticated real-time correlation techniques create a common operating picture. Compliance with IALA requirements for VTS and VTIMS applications.

COMMAND & CONTROL

GEM C4I application is a well-proven solution used worldwide on coastguard fast patrol fleets. Main goals are: situational awareness, support to ship mission, fleet coordination and communication. Key features: simple and highly intuitive human machine interfaces, fast response time to external real-time events.

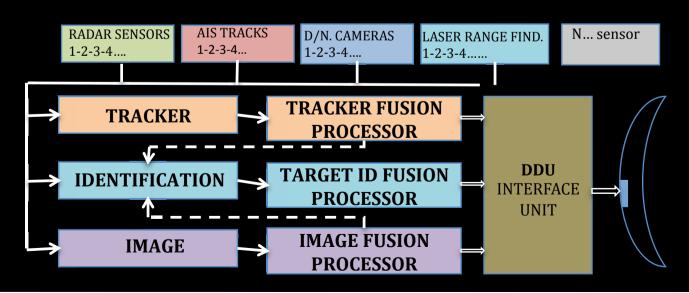
INTEGRATED NAVIGATION

GEM IBS (Integrated Bridge System) is an open architecture able to integrate navigation and surveillance requirements in a single solution. All data coming from ship sensors are acquired, integrated and distributed to multifunctional consoles. Moreover IBS is readily interfaced with on-board CMS to share data and orders.

DATA FUSION

Most coastal surveillance and homeland security systems used several types of sensors with different technologies (radar, SAR imagery, infrared, laser range finder, AIS tracks, sonar...) to provide surveillance and monitoring over large areas.

To obtain superior performance of the systems, increased surveillance capability and reduced information uncertainty GEM elettronica offers automatic multi-sensor data fusion technologies and management system. Combined information assists the operators to detect, track, identify critical targets at any time, in the sea, undersea, land, air and all under weather conditions rendering a more complete scenario of the system.



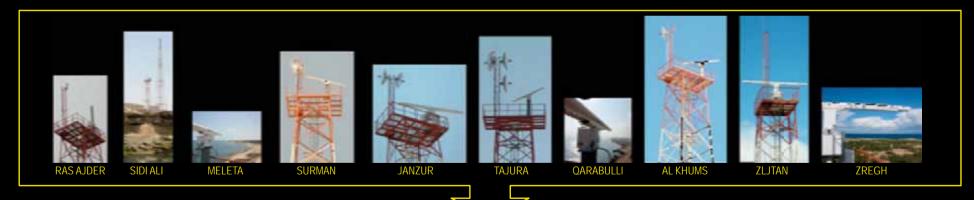


SURVEILLANCE AND HOMELAND SECURITY:

Libyan Vessel Traffic Management and Information System



One control Center - 10 unmanned remotely driven coastal sites - Supply of radar, AIS, Optronics, TLC backbone, system design and commissioning 300,000 km² sea waters real-time monitoring





JAZUR control center



SURVEILLANCE AND HOMELAND SECURITY: REFERENCES – SUPPLIES TO MAJORS









ALBANIA ARGENTINA **BARHAIN BULGARIA CHINA CROATIA CYPRUS GEORGIA GIBRALTAR GREECE INDIA INDONESIA ITALY KENYA** LIBYA MALTA **MALESIA MOROCCO NEW ZELAND QATAR ROMANIA SIRIA TAIWAN TURKEY**







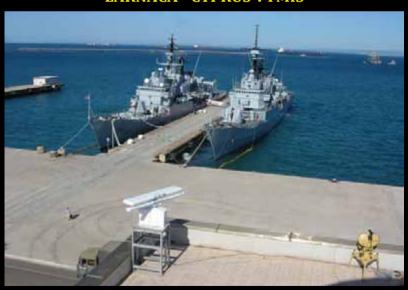
RAS LAFFAN VTMIS Harbor



KANDILLI - TURKEY



LARNACA - CYPRUS VTMIS



 $\begin{array}{c} \textbf{TARANTO} - \textbf{K}_{a} \textbf{-} \textbf{X} \ \textbf{band} \ \textbf{radar} \ \textbf{for} \ \textbf{TARANTO} \\ \textbf{HARBOR} \ \textbf{SECURITY} \ \ \textbf{NATO} \ \ \textbf{TRIALS} \end{array}$



TRAINING & SIMULATION

TRAINING

To meet your specific training requirements we offer both standard and tailor made courses that teach the use and maintenance of our products. For each of our standard courses you will find the course description in PDF-format describing objectives, target audience, contents of course, entry requirements, teaching method, teaching medium & duration.

Our courses are designed to give participants a deep understanding and detailed product knowledge within each course curriculum. Courses may include both operational and technical training and vary from basic levels to advanced training depending on the required training level.





SIMULATION

GEM elettronica simulation experience is covering modern ship operation including bridge operations, communications/GMDSS and VTS.

Modern marine simulators allow training in both standard procedures and emergencies, developing professional skills and consolidated GEM elettronica simulation systems have been used extensively by specialists in commercial fleets, navies and coast guards.



GUIDANCE, NAVIGATION & POSITIONING: TECHNOLOGIES AND CAPABILITIES

The in-house design and development of closed loop Fiber Optic Gyroscopes allows **GEM elettronica** to realize a wide range of high performance products in the field of guidance, gyro compassing, inertial navigation and stabilization for a broad spectrum of applications. GEM's FOG delivers high precision and reliable performances assuring the highest level of manufacturing processes at lower cost and smaller size than other comparable gyros. Thanks to open interface these products can be integrated into complex systems like command and control systems. Our Company provides its customers with solutions tailored to their needs and these capabilities are offered and supported worldwide.

HEELMARK



SURF-100 - Inertial Navigation System



FOG-100 & FOG-200 Fiber Optic Gyro



Polaris FOG-50



Dual Axis FOG

SEA/UNDERSEA

- ➤ GYROCOMPASS
- > INERTIAL NAVIGATION
- > ATTITUDE AND HEADING REFERENCE SYSTEM (AHRS)
- > SHIP STABILIZATION
- ➤ NAVIGATION, CONTROL AND GUIDANCE OF SONAR, AUVs, ROVs
- ➤ MISSILE AND TORPEDOES GUIDANCE
- > ELECTRO-OPTIC AND RADAR STABILIZATION

LAND/UNDERGROUND

- > VEHICLE NAVIGATION AND POSITIONING SYSTEMS
- > UNDERGROUND NAVIGATION
- > MINING AND DRILLING
- > MINE AND TUNNEL SURVEY
- ➤ GEOTECHNICAL
- > CIVIL ENGINEERING

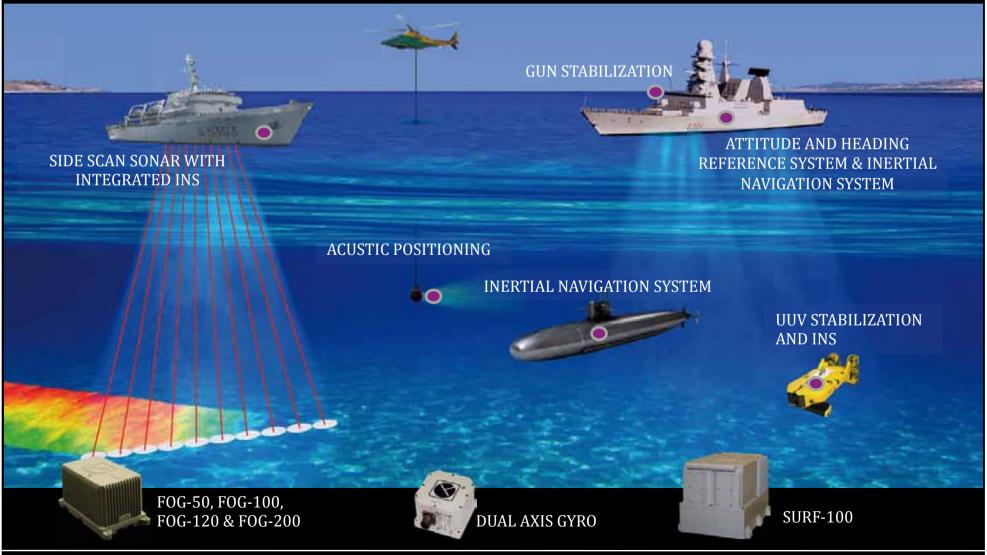
AIR/SPACE

- ➤ INERTIAL NAVGATION SYSTEM (INS) FOR MISSION CONTROL AND FLIGHT CONTROL SYSTEMS
- > UNMANNED AEREAL VEHICLE GUIDANCE
- > MISSILE GUIDANCE
- > SATELLITE STABILIZATION APPLICATIONS



GUIDANCE, NAVIGATION & POSITIONING: TECHNOLOGIES AND CAPABILITIES SEA/UNDERSEA

Today, **GEM elettronica** offers high-precision guidance, navigation and positioning systems technology serving Naval Defence and Maritime Industry. Both on the surface and undersea, our line of navigation and inertial reference systems, based on advanced, closed loop Fiber Optic sensors, are operational for various applications.





GUIDANCE, NAVIGATION & POSITIONING: TECHNOLOGIES AND CAPABILITIES LAND/UNDERGROUND

GEM elettronica designs and manufactures inertial sensors, inertial reference and navigation systems that can be used in a wide range of OEM, Army and land industrial applications also in conditions of high shock and vibration environments.

We offer a variety of single or multi-axis Fiber Optic Gyroscopes and systems to provide surface and underground navigation, surveillance, stabilization and pointing solutions with superior performance and extreme precise measurement of position, azimuth and kinematic data. Our Company provides its customers solutions tailored to their needs and these capabilities are offered and supported worldwide.





GUIDANCE, NAVIGATION & POSITIONING: TECHNOLOGIES AND CAPABILITIES SKY/SPACE

GEM elettronica offers inertial sensors that can be used in avionics and spacecraft applications for navigation and flight control. They utilize closed loop sensor Fiber Optic technology to produce data output (attitude, heading, speed, pitch, roll, yaw...) with great precision and accuracy. The FOG 200/INS and the SURF 100 characteristics and performance make them suitable for a wide spectrum of Inertial Navigation applications, including mission control and flight control systems. They feature short start-up, very low drift, high stabilization and high shock survivability. GEM elettronica's Fiber Optic gyroscopes production facility is certified to EASA Part21G.





DEFENCE SYSTEMS: TECHNOLOGIES AND CAPABILITIES

For over 30 years, our Company has specialized in the design, development and production of highly reliable products for use in military & defence, law enforcement and severe environment applications. Product line provides a wide range of full solid state 3D radar, navigation radar systems with Low Probability of Intercept (LPI) capability, field radar, Tactical Table, a series of Command and Control Consoles, W-Ecdis, Electro-Optic & Fire Control Systems, Integrated Bridge Systems, Inertial Systems based on Fiber Optic gyroscopes and relevant ancillaries. These products have been designed to support many defence mission scenarios while significantly reducing weight, size, installation time, power, service and costs.







RADAR SYSTEMS AND ANCILLARIES

COMMAND AND CONTROL CONSOLES

ELECTRO-OPTICS AND ANCILLARIES

TACTICAL TABLE

W-ECDIS

INTEGRATED BRIDGE SYSTEMS

FIBER OPTIC GYROCOMPASSES

GUIDANCE, & INERTIAL SENSORS



DEFENCE SYSTEMS: TECHNOLOGIES AND CAPABILITIES RADAR SYSTEMS

GEM elettronica is a leading manufacturer of surveillance radar systems, on board radars and land tactical field radar. We design and manufacture these products with a new level of performance, quality, and operational capability. For more that 30 years we have delivered innovative radar equipment and solutions for Navy, Coast Guard and other law enforcement agencies for tactical operations, navigation safety and military missions. Through its innovative spirit and technological ability GEM elettronica is developing a 3D radar for coastal surveillance, control of wide areas and on board search and navigation applications. GEM elettronica also manufactures a wide range of full solid state surface radar sensors and systems with Low Probability of Intercept (LPI) and helicopter approach capability.





DEFENCE SYSTEMS: TECHNOLOGIES AND CAPABILITIES RADAR SYSTEMS

MFRAD/N

MFRAD/N is a compact and advanced radar system featuring short to long-range air and surface target surveillance along with weapon systems target designation. Developed from proven and state-of-the-art technologies, MFRAD/N utilizes an extremely lightweight antenna with reduced electrical power consumption and very high reliability.







DEFENCE SYSTEMS: TECHNOLOGIES AND CAPABILITIES COMMAND AND CONTROL CONSOLE

GEM elettronica offers a wide range of high quality ergonomic command and control consoles designed to support a wide array of surface ships, submarine applications, military command and control centres in accordance with the most stringent military standards. We provide solutions for high integrity requirements including Naval Command, Control, Communications, Computer & Intelligence (C4I) systems, target tracking and gunfire control systems, Geospatial Information Systems (GIS), Tactical Data Link, electro-optical surveillance, weapon interfacing, safety critical system. We provide solutions across a range of Command, Control, Communications, Computer & Intelligence (C4I) and Torpedo Board Interface console (TBI).



COMBAT SYSTEM



ELECTRONIC WARFARE



COMBAT SYSTEM



EOSS MANAGEMENT



W-ECDIS



INTEGRATE BRIDGE SYSTEM



TORPEDO BOARD INTERFACE



DEFENCE SYSTEMS: TECHNOLOGIES AND CAPABILITIES **ELECTRO-OPTICS**

GEM elettronica Electro-Optical Surveillance Systems (EOSS), designed for shore and on-board applications such as SAR (Search-and-Rescue) and day/night Optical Surveillance, allow passive target detection and identification. In order to satisfy a very wide variety of operational requirements, our EOSS can be supplied in many configurations and are also suitable for long-range surveillance applications; continuous Nx360 azimuth rotation

is achieved using a slip-ring.







ALI





EOSS 350

EOSS 450



VIDEOTRACKER VTU-110



DEFENCE SYSTEMS: TECHNOLOGIES AND CAPABILITIES EOFCS SYSTEM ARCHITECTURE





DEFENCE SYSTEMS: TECHNOLOGIES AND CAPABILITIES W-ECDIS

Each W-ECDIS model is type approved by DNV, having been tested according to the latest IMO, IHO and IEC specifications; our W-ECDIS has been adopted by the Italian Navy as well as other Navies in the world,

professional vessel companies etc.



"BOX UNIT"

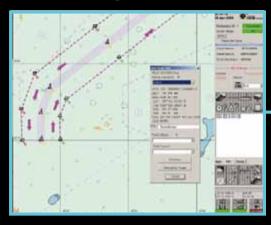


"BOX UNIT"	Basic configuration including monitor, keyboard, computer unit with basic interfaces & installation kit.
"DESKTOP"	Full optional ECDIS including table-top unit, RUGB-70-26 unit with basic and optional interfaces, UPS, installation kit, user manual.



DEFENCE SYSTEMS: TECHNOLOGIES AND CAPABILITIES TACTICAL TABLE

GEM elettronica's Tactical Table is specifically designed to meet the hard requirements of the Human Machine Interface (HMI) and provide the user with a prompt Command & Control interface in order to minimize the response time in operative missions





ADVANTAGES:

- Precise navigation and determination of own ship's position;
- Full ECDIS compliance;
- Route management and trip computing;
- Presentation of surface and submarine targets as Combat System Tracks (CST)
- 1000 tracks management with target route estimate;
- Intercept point estimate of all tracks, projection of surface situation;
- Target identification class, local (manual) track initiation
- Recording & Playback
- Print facility
- Time-count



DEFENCE SYSTEMS: TECHNOLOGIES AND CAPABILITIES INTEGRATED BRIDGE SYSTEMS





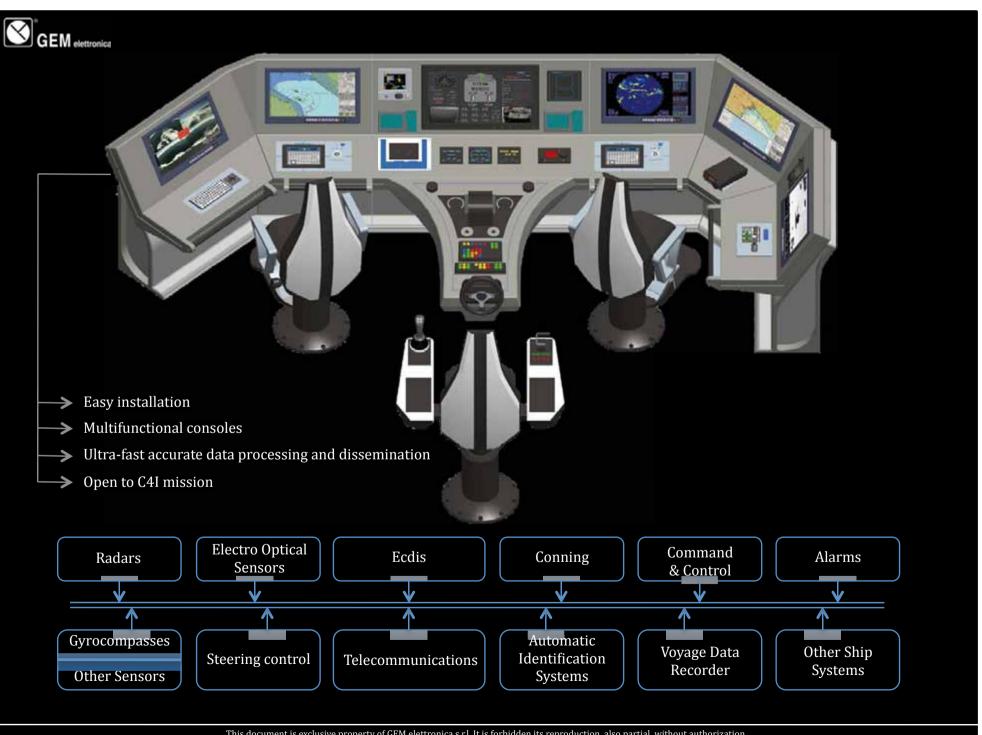


OMANI COAST GUARD

ITALIAN GUARDIA DI FINANZA

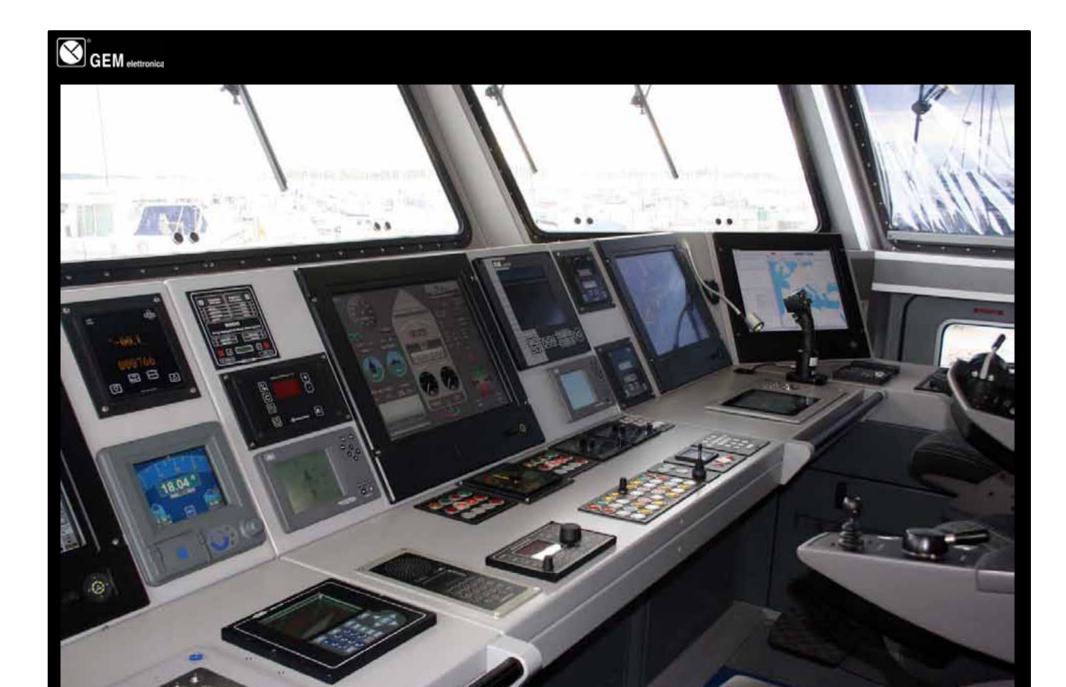
ITALIAN NAVY

GEM elettronica Integrated Bridge System provides multi-function work stations capable of managing the ship's navigation functions. Each workstation shall be able to present all ship functionalities, such as radar, W-ECDIS, tactical table, communications etc. Alarm, group, channel and graphic pages can be selected via a user friendly operator keyboard with track ball. Graphic pages are available for each application in order to provide mimic overviews of ships equipment / system. Each operator station shall operate completely standalone and is connected to the redundant network with the use of redundant servers, playing a key role in distributing management and control functions.





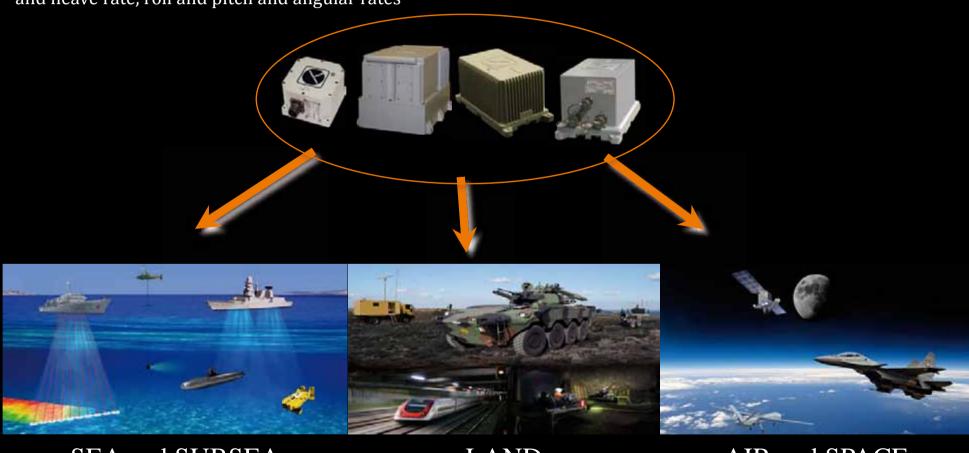






DEFENCE SYSTEMS: TECHNOLOGIES AND CAPABILITIES GUIDANCE & INERTIAL SENSOR

The strap-down inertial navigation system based on state-of- the-art Fiber Optic gyroscopes technology offers a highly reliable and cost-effective solution for Sea and UnderSea, Land, Air and Space applications. It gives an accurate, real-time reading without GPS aiding of: true north, position, linear velocity, linear acceleration, heave and heave rate, roll and pitch and angular rates



SEA and SUBSEA

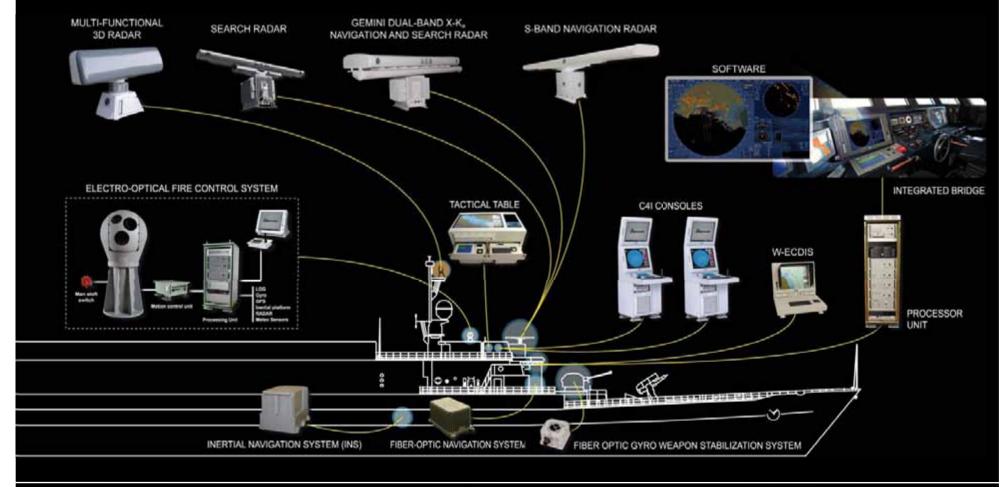
LAND

AIR and SPACE



DEFENCE SYSTEMS: COMBAT MANAGEMENT SYSTEM

GEM elettronica Combat System solution is an open system architecture offering low costs for acquisition, maintenance, and life-cycle. Its modular software allows future upgrades and additional sensors without software failure and expensive upgrades: the system architecture proposed offers a complete software package, including an additional module managing the communication equipment fitted with standard NATO Link 11 and 22. Main strengths are an advanced information management system merging all data on a single display, flexible design approach establishing a baseline for future growth. System and subsystems components are selected for high reliability, low maintenance, easy support and minimized training.

























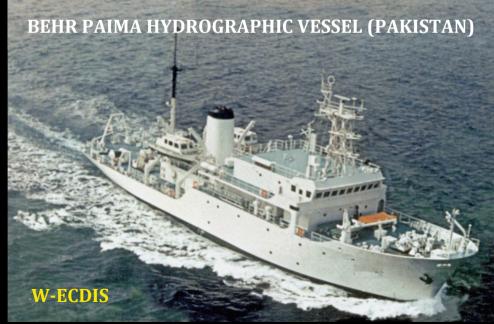












MULTIFUNCTIONAL CONSOLE







MARINE ELECTRONICS

The new demand of modern sea and river navigation requires equipment with superior performances than traditional ones, GEM Elettronica Srl is investing every year both professional and financial resources to offer an effective response to all these professional needs.







IMO RADAR

IMO ECDIS

RIVER RADAR

ECDIS

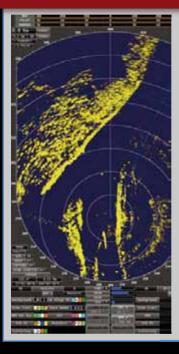
INTEGRATED BRIDGE SYSTEMS

IMO GYROCOMPASS



MARINE ELECTRONICS

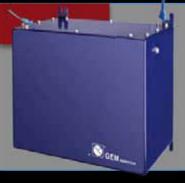
RIVER RADAR



New Generation Inland Radar

- Digital Technology
- 22" display with multi-menu
- Mini conning
- AIS view
- IVP Intelligent Video Processing
- User friendly operation

BLUE-BOX



MARINE RADAR

SUPER/N=

- Radar / Plotter / Videocamera
- Universal Mounting
- Ethernet LAN
- User Friendly

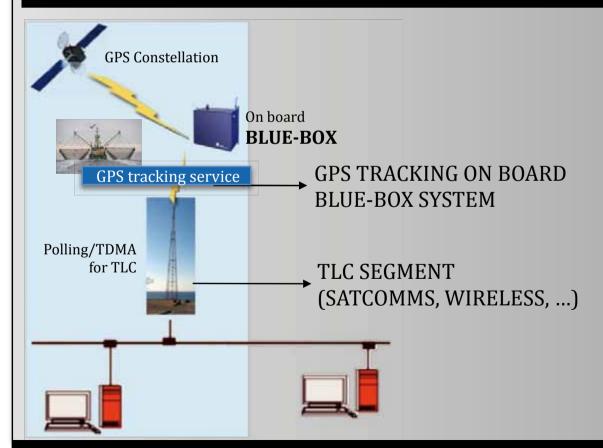


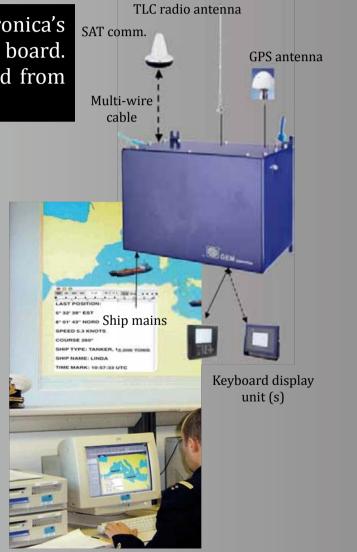


MARINE ELECTRONICS FLEET TRACKING AND MONITORING "BLUE-BOX"

The **Italian fishing fleet** is currently equipped with GEM elettronica's **BLUE-BOX**. More than **5.000 terminals** have been installed on board. The position/status of the fishing fleet is constantly monitored from the **Control Centre**.

Multi-wire







MARINE ELECTRONICS WHEELMARK X & S BAND RADAR





LD 1910 LD 2310 LD 1925 / LD 2325 /

LD1930S-RK LD 2330S-RK/AC

Open antenna 6/7.5/9 feet 4/12/25 KW **X-Band**



Antenna 9 and 12 feet

Upmast S-Band 30 KW = **S-Band**

50 KW = S-Band

Equipment for boats, fishing, river commercial vessel and super yachts



MARINE ELECTRONICS FIBER-OPTIC GYROCOMPASS



Polaris FOG-50



Polaris FOG-100



Certificate N. 94 022 - 10 HH N. 94 023 - 10 HH



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