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.

WE STRIVE FOR ENGINEERING EXCELLENCE
Since 1977, **GEM elettronica** has been on the cutting edge of R&D, design and manufacturing of electronic systems dedicated to the commercial maritime, navy and coastal surveillance missions.

As a leading industry in its sector, **GEM elettronica** has developed an extensive portfolio of products which features state-of-the-art technologies and innovative designs.

Thanks to its ground-breaking technical approaches, high product reliability and cost-competitive offers, **GEM elettronica** has became the supplier-of-choice for several international navies, coast guards, commercial vessel operators and large system integrators.
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

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<td>USA</td>
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<tr>
<td>GREAT BREITAIN</td>
<td>NORWAY</td>
<td>VENEZUELA</td>
</tr>
</tbody>
</table>

Main current industrial and commercial co-operations
- Lockheed Martin
- Koll Morgen
- Withead Alenia
- Galileo Avionica
- Leonardo S.p.A.
- Oto Melara
- Fincantieri
- Elettronica S.p.A.
- Oerlikon Contraves
- Raytheon
- Rohde & Schwarz
- Intracom
- Sagem
- Page Europe
- Transas
- Telecom Italia
- Kearfott

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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

**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
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.

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

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.

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.
GEM elettronica is engaged in different areas of HOME LAND 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
SURVEILLANCE AND HOMELAND SECURITY: TECHNOLOGIES AND CAPABILITIES

RADAR ANTENNAS

SURVEILLANCE RADAR SYSTEMS

THERMAL IMAGING

ACTIVE LASER IDENTIFICATION (ALI)

SOFTWARE SOLUTIONS & DATA FUSION

SIMULATION & TRAINING
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

**SERIES ASX-2101FD / ASX-1901FD**
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
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.

- **MFRAD/S**
  - 3D Surveillance Radar Systems

- **SENTINEL**
  - 2D Surveillance Radar Systems

- **GEMINI**
  - X-Ka Dual Band Radar Systems

- **PERIMETER SURVEILLANCE RADAR SYSTEM**

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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.
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.
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.

**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 multi-functional consoles. Moreover IBS is readily interfaced with on-board CMS to share data and orders.
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
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 ZEALAND
QATAR
ROMANIA
SIRIA
TAIWAN
TURKEY

Italy
Albania
Malpensa Airport
Turkey

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RAS LAFFAN  VTMIS Harbor

LARNACA - CYPRUS VTMIS

KANDILLI - TURKEY

TARANTO – $K_a$–X band radar for TARANTO HARBOR SECURITY  NATO TRIALS

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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.

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 NAVIGATION SYSTEM (INS) FOR MISSION CONTROL AND FLIGHT CONTROL SYSTEMS
- UNMANNED AERIAL VEHICLE GUIDANCE
- MISSILE GUIDANCE
- SATELLITE STABILIZATION APPLICATIONS
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.
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.
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.
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.
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 than 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.
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.
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 systems. We provide solutions across a range of Command, Control, Communications, Computer & Intelligence (C4I) and Torpedo Board Interface console (TBI).
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.

EOSS-200  EOFCS-115A  ALI  EOSS 350  EOSS 450  VIDEOTRACKER VTU-110
DEFENCE SYSTEMS:
TECHNOLOGIES AND CAPABILITIES
EOFCS SYSTEM ARCHITECTURE

Operator Console LCD 23” colour monitor

Light-weight Optronic Turret

Man afloat switch

Motion Control Unit

Weapon System

Electronic Control Cabinet

LAN
(Multiconsole applications Data Bus,...)

LOG
GPS
RADAR
METEO SENSORS (1)
(wind, temperature, humidity)

Optional input

Strapdown AHRS

(1) When absent, the data will have to be inserted manually

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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.

<table>
<thead>
<tr>
<th>“BOX UNIT”</th>
<th>Basic configuration including monitor, keyboard, computer unit with basic interfaces &amp; installation kit.</th>
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<tbody>
<tr>
<td>“DESKTOP”</td>
<td>Full optional ECDIS including table-top unit, RUGB-70-26 unit with basic and optional interfaces, UPS, installation kit, user manual.</td>
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</tbody>
</table>
SMW-100 is a General situation workstation based on an IMO ECDIS certified software with the additional package managing Warship specific functionalities specially designed for Surface Vessel and Submarine applications.

The System architecture is constituted by:

- Ruggedized 55", 4K screen display
- Touchscreen
- Wireless keyboard and mouse
- Embedded ECDIS processor
- Interface unit for on board sensor integration
- Radar interface for video overlay
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 stand-alone and is connected to the redundant network with the use of redundant servers, playing a key role in distributing management and control functions.
Easy installation
Multifunctional consoles
Ultra-fast accurate data processing and dissemination
Open to C4I mission

Radars
Electro Optical Sensors
Ecdis
Conning
Command & Control
Alarms

Gyrocompasses
Steering control
Telecommunications
Automatic Identification Systems
Voyage Data Recorder
Other Ship Systems
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.
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.
AIRCRAFT CARRIER VESSEL CAVOUR
Integrated Bridge System & EOS

ITALIAN NAVY
AIRCRAFT CARRIER VESSEL CAVOUR

ROYAL OMAN COAST GUARD – HARAS-1

HARAS-1 – Integrated Bridge System & EOS
DEFENCE SYSTEMS:
REFERENCES – MAIN SUPPLIES

CIGALA FULGOSI CLASS (ITALY)
INTEGRATED BRIDGE SYSTEM
(ARPA RADAR, W-ECDIS, NAVIGATION SENSORS)

DURAND DE LA PENNE CLASS (ITALY)
NAVIGATION CONSOLE:
WITH ARPA RADAR AND W-ECDIS,

CORVETTE FOR UAE
INTEGRATED BRIDGE AND CMS INTERFACE

GELIBOLU – G CLASS (TURKEY)
NAVIGATION CONSOLE WITH LPI - ARPA RADAR AND W-ECDIS

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DEFENCE SYSTEMS:
REFERENCES – MAIN SUPPLIES

COAST GUARD - 200 FPB CLASS

CUSTOMS GUARD - BIGLIANI CLASS

SAETTIA OFFSHORE PATROL BOAT

MILITARY POLICE - 800 CLASS
DEFENCE SYSTEMS:
REFERENCES – MAIN SUPPLIES

W-ECDIS

ATILAY “MOON” CLASS SUBMARINE (TURKEY)
DEFENCE SYSTEMS:
REFERENCES – MAIN SUPPLIES

- BEHR PAIMA HYDROGRAPHIC VESSEL (PAKISTAN)
- W-ECDIS
- MULTIFUNCTIONAL CONSOLE
- CONSTITUCAO NITEROI-CLASS FRIGATE (BRASIL)
OPV BIRANZARENE - MAROCCO

EOFCS
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.
MARINE ELECTRONICS

NEW Generation Inland Radar

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

RIVER RADAR

MARINE RADAR

SuperNet

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

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**.
MARINE ELECTRONICS
WHEEMLMARK X & S BAND RADAR

Equipment for boats, fishing, river commercial vessel and super yachts
MARINE ELECTRONICS
FIBER-OPTIC GYROCOMPASS

Polaris FOG-50

Polaris FOG-100

WHEELMARK
Certificate
N. 94 022 – 10 HH
N. 94 023 – 10 HH

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