

**GEC-Marconi**

Defence Electronics

# **GEC-Marconi**

GEC supplies many nations with products for safeguarding the defence and security of their peoples.

GEC-Marconi, a world-leading group in defence electronics, offers a complete capability from satellites to warship building.

The underlying technologies are successfully applied in a very large civil business.

GEC-Marconi's breadth of product range and capabilities enable its companies to act as major systems suppliers and prime contractors for all types of defence and civil contracts.

# Right across the Board...

GEC-Marconi is a leader among the world's most successful electronic systems groups, with annual sales approaching £2 billion and a breadth of applications experience in every environment, from the sea bed to space.

The group has advanced research, development, design, manufacturing and through-life support facilities, centred in the United Kingdom, Italy, Canada and the United States and backed by representation worldwide. These enable GEC-Marconi companies to apply the latest technology in the systems, equipment and services they supply to the governments and private industries in more than 70 nations.



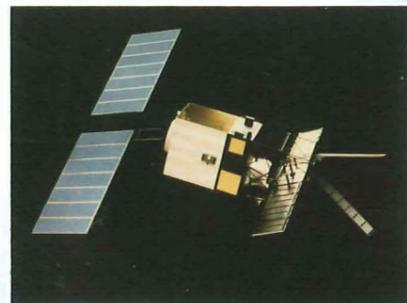
**GEC-Marconi**

# has the Strength and Breadth



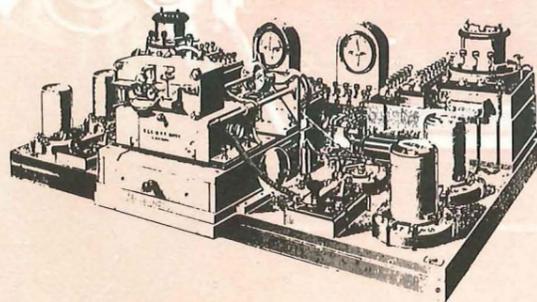
Committed to competitiveness through innovation, both in systems technology and management, the group derives its success from project teams, each dedicated to the customer's needs and invested with the skills and resources to meet programme objectives cost-effectively.

Whatever a nation's needs, for defence, the security of its people, for commerce or industry, transport or communication, GEC-Marconi offers a unique and comprehensive systems capability, right across-the-board.



# Innovation is our Tradition...

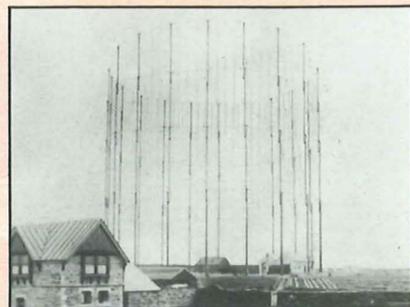
Our tradition owes much to two great men: William Elliott who established an instrument-making business in London in 1800 and Guglielmo Marconi who applied for the world's first patent for wireless telegraphy, in 1897. They each laid the foundations of companies which would establish a history of innovation through advances in scientific instruments, telegraphy, computing, radio and television, navigation, automation, radar, electro-optics, and electronic systems of every kind. These great traditions came together in 1967, with the merging of the Elliott company, renowned for automation, and the Marconi Company which will forever be associated with the creation of wireless communications. Coupled with the earlier achievements of BTH and Metropolitan Vickers the GEC-Marconi group is the modern embodiment of the finest British engineering traditions.



Submarine repeater set made by Elliott Brothers, 1895.

Background photograph  
Marconi and early apparatus, 1896.

Marconi antenna system at Poldhu in  
transatlantic experiment of 1901.



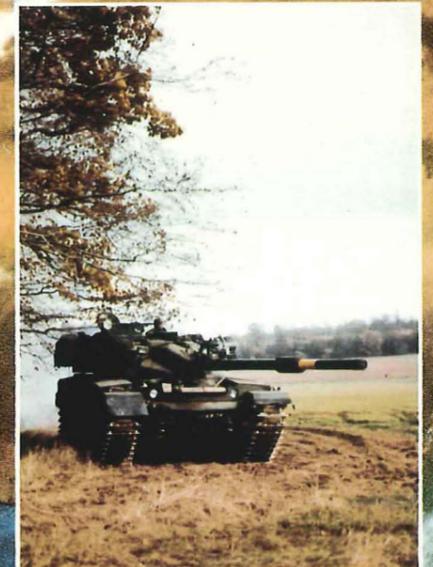
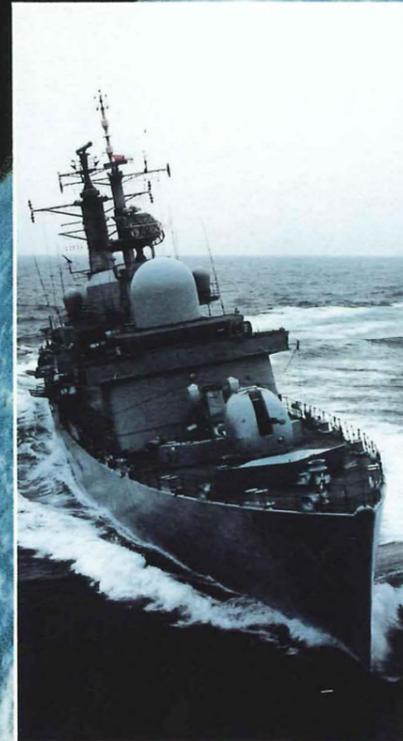
Our latest torpedo, Spearfish, is the most  
advanced wire-guided heavyweight type in  
the world.

A GEC member of the team which invented  
holograms helped to develop our  
holographic head up display, part of the  
night flying system fitted to F-16 fighters.



# ... Integration is our Strength

GEC-Marconi is a 48,000 strong  
group of companies with Total  
Defence Systems capability  
generating a turnover of  
£2 billion per year.

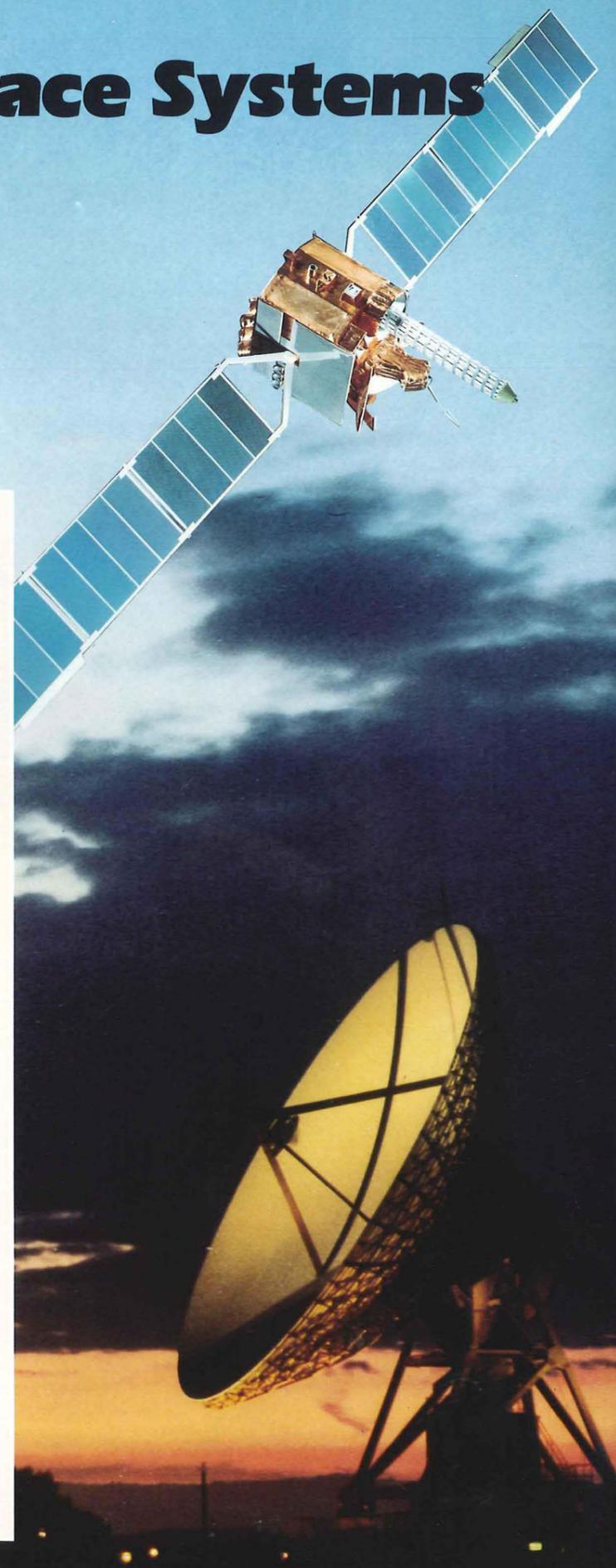


# Space Systems

Satellite Control Station for Skynet-4 is backed by hardware and software support to ensure effective missions.

**TRACK RECORD**

1964 Ariel 2 Science	1979 TIROS N-2 Meteorology
1967 Ariel 3 Science	1979 Ariel 6 Science Prime Contractor
1968 OGO-E Science	1979 Intelsat V-1 Comms
1968 ESRO-1 Science	1980 Intelsat V-2 Comms
1968 HEOS-1 Science	1981 TIROS N-3 Meteorology
1970 Nimbus-D Meteorology	1981 Meteosat F-2 Meteorology
1971 Prospero (X-3) Technology	1981 Intelsat V-3 Comms
1971 Ariel 4 Science	1981 Marecs A Maritime Comms
1972 TD1A Science	1982 Intelsat V-4 Comms
1972 OAO-C Science	1982 Intelsat V-5 Comms
1972 Nimbus-E Meteorology	1982 Marecs B Maritime Comms
1974 Skynet 2A Military Comms Prime Contractor	1983 Exosat Science
1974 Miranda (X-4) Technology	1983 Intelsat V-6 Comms
1974 Ariel 5 Science Prime Contractor	1983 ECS 1 Comms
1974 Skynet 2B Military Comms Prime Contractor	1983 Intelsat V-7 Comms
1975 Nimbus F Meteorology	1984 Marecs B2 Comms
1976 NATO IIIA Military Comms	1987 Meteosat F-3 Meteorology
1977 NATO IIIB Military Comms	1987 Olympus Comms
1977 ETS II Comms Technology	1988 Skynet 4A Military Comms
1977 OTS I Comms Technology	1988 Skynet 4B Military Comms
1977 Meteosat 1 Meteorology	1988 Meteosat F-4 Meteorology
1977 CS1 Comms	1988 Eureka Comms
1978 IUE Science	1989 Skynet 4C Military Comms
1978 OTS II Comms Technology	1989 EUTELSAT II Civil Comms
1978 TIROS N-1 Meteorology	1989 Meteosat F-5 Meteorology
1978 NATO IIIC Military Comms	1989 ERS-1 Remote Sensing Radar



The quality of life of free peoples relates to their ability to communicate, their right to defence and to knowledge, of this planet and the Universe.

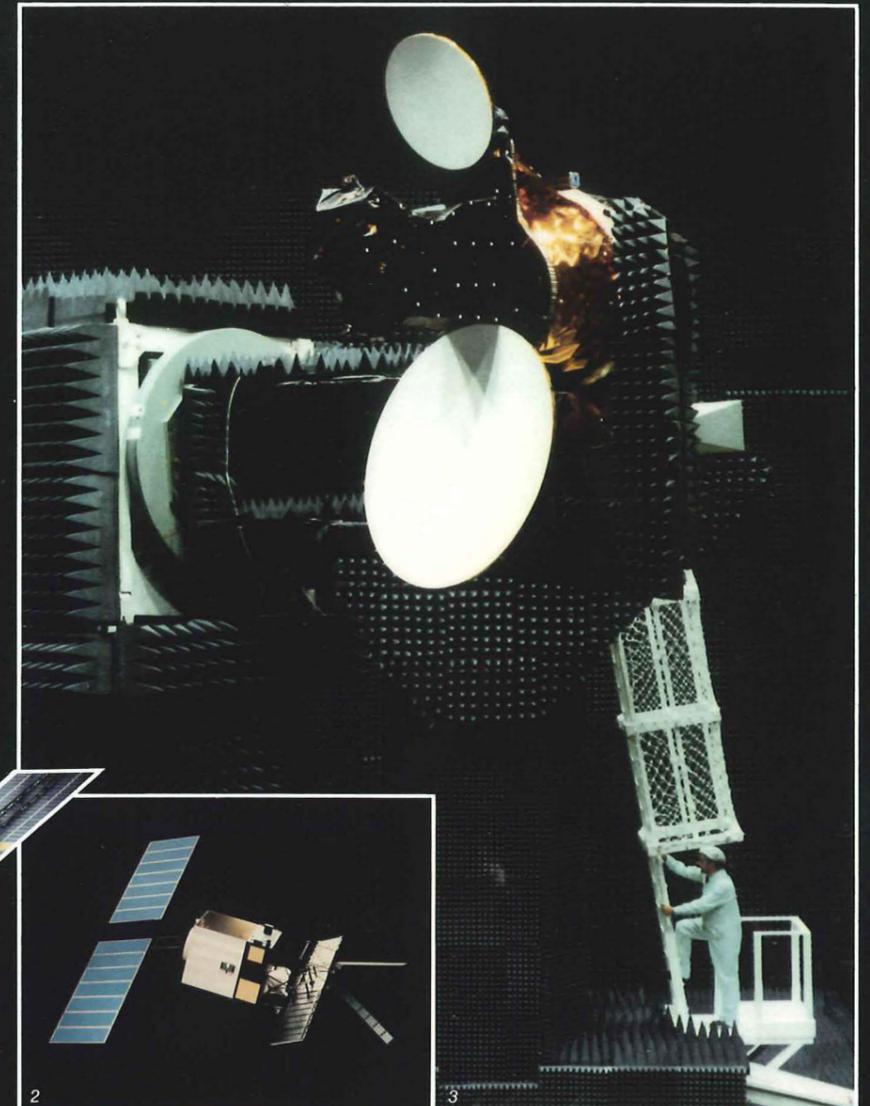
Space systems are the key to their freedoms and no aerospace company in Europe offers greater expertise in spacecraft design or more achievements in the design and manufacture of complete satellites and satellite systems.

Capabilities include:

- Satellites and payloads for
  - military communications
  - broadcasting
  - mobile and fixed base communications
  - remote sensing
  - scientific applications

Attitude Sensing and Control Systems

Ground Control Systems for Satellites



1 Olympus, a range of communications satellites sponsored by the European Space Agency will carry our special payloads, to provide computer-to-computer links as well as speech communications.

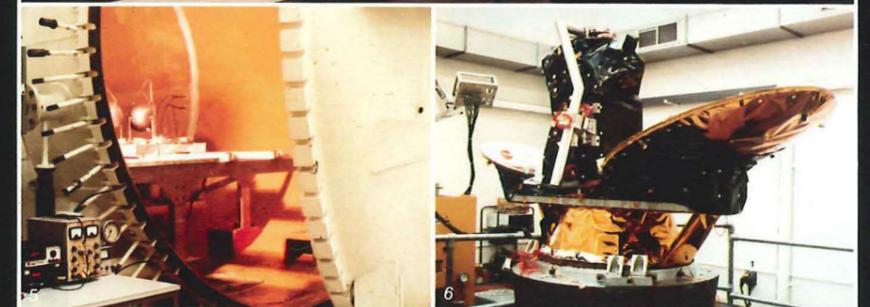
2 ERS-1 satellite, with our remote-sensing radar, is Europe's first for ocean observation.

3 Our antenna test range is among the world's most advanced enclosed facilities.

4 Satellite (ground) control.

5 Propulsion systems for attitude control: vacuum chamber for hot firing tests.

6 Comprehensive environmental test facilities include vibration and EMC testing.



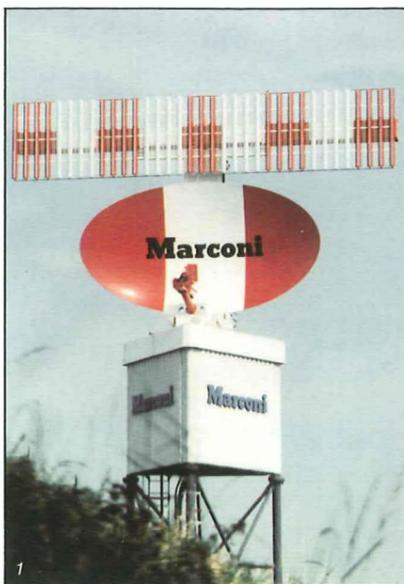
# Air Systems

As Europe's leading electronic systems group we supply virtually all aspects of avionic systems, used in the air and on the ground. The world's manufacturers and operators of civil and military aircraft choose our systems for their advanced capability, affordable cost and through-life support.

Over the years we have developed a full range of airborne avionic systems, many of which, such as fly by wire flight controls and night attack systems, are acknowledged as world leaders. We now supply an unrivalled range of equipment and sub-systems, as individual units and as partial or fully integrated systems. They are supplied to new aircraft, and for up-dating older airframes with the latest operational capabilities.

Our wide-ranging ground support for military and civil flight operations also includes:

- En route navigation aids such as VOR
- Meteorology systems: VOLMET
- Transportable air defence systems
- Automatic powerplant test systems
- Automatic test systems



*Main photograph:*

We are avionics integrators for the European Tornado and supply major systems, including 'fly by wire', electronic displays, EW and AI radar.

- 1 We have over 35 years experience in specialised ATC radar and SSR systems. This S511 Approach Control Radar has our Messenger monopulse SSR.
- 2 The world's airlines are fitted with our avionics ranging from flight control to doppler systems. Our autothrottle system and ground-based ATE are serving Boeing 747 operators.



*Main photograph:*

With our US associate Lear Astronics we are developing the fly by wire system for the YF-22A advanced tactical fighter prototype which Lockheed is developing in a US Air Force competition.

- 1 Our head up displays equip all General Dynamics F-16 aircraft (photo copyright Maj. Chuck Killberg USAF).
- 2 We are achieving record production deliveries for our new Standard Air Data Computer designs for the US Navy and the US Air Force.
- 3 Our Foxhunter Airborne Interceptor Radar in service in the Tornado ADV provides advanced operational capabilities to meet the threats of the 1990's.
- 4 Our "see by night"-infra red systems are chosen for RAF Tornado and Harriers and fitted to several US military aircraft.
- 5 UHF communications radio for GR.5 Harrier.
- 6 We are major suppliers of a new generation of Anti Submarine Warfare systems including acoustic processing, displays and tactical management. This one is in the Fokker Maritime Enforcer.
- 7 We pioneered the retrofit of advanced avionics systems to up-date the operational capability of existing in-service aircraft. The Royal Thai F-5 is the latest of a long line of successful Attack Fighter improvement programmes.
- 8 We are prime contractors for the whole of the British Army Phoenix battlefield surveillance system (photo courtesy RAE Larkhill).

Our airborne system capabilities include:

- Airborne displays
- Aircraft updates
- AI and ranging radar
- Air data systems
- ASW sonar and tactical systems
- Automatic flight control
- ECM and threat warning
- Fly by wire/fly by light
- FLIR systems
- Guidance systems for aircraft/ weapons
- Holographic and dual mode HUD
- Laser and laser-based systems
- Maritime aircraft systems
- Night attack systems
- Power conversion
- Powerplant systems
- Radio navigation/comms systems
- Recording systems
- RPV and RPV systems
- Stealth systems
- Stores management
- Total Terrain navigation - T<sup>2</sup>A
- Weapon aiming systems

backed up by systems research and worldwide support.



# Missile Systems

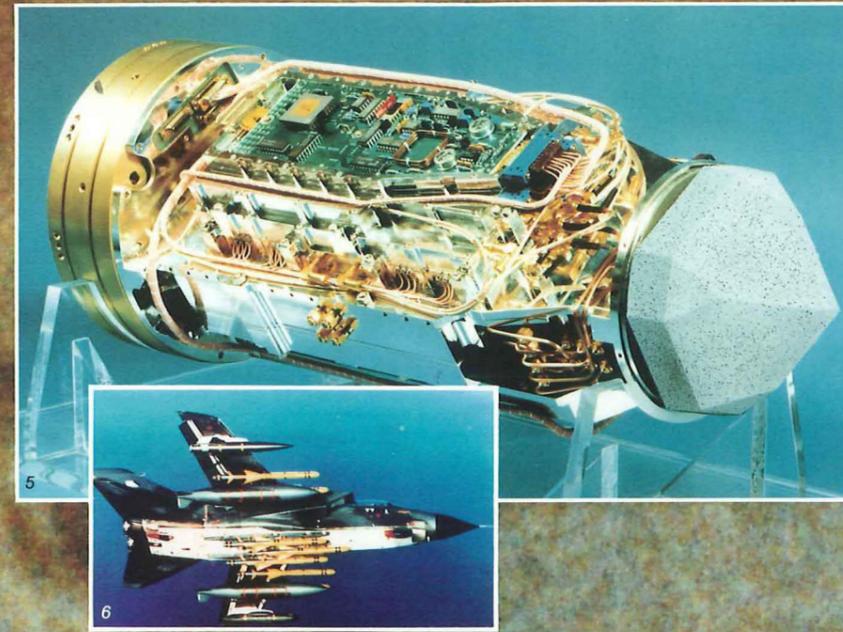
Guided missiles provide the ultimate in accuracy and reach, which allows the defender to overcome his opponent, even in the most adverse conditions.

Since the advent of guided weapons in the mid 1940's GEC-Marconi companies have been at the forefront of missile guidance systems. Today, we provide not only the ground based control of surface to air missiles, but also the self-contained guidance systems used in a wide range of air launched missiles.

In long-range "beyond visual range" engagements our Skyflash guidance system, in its various forms, is the most capable in its class in service in the world today equipping both the RAF and other nations' airforces.

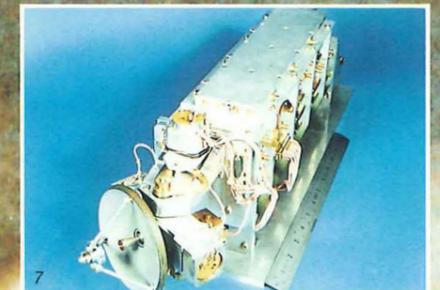


In the anti-shiping role Sea Eagle and Sea Skua missiles provide helicopters and fixed wing aircraft with the capability of delivering a knockout blow beyond the reaches of a target's defensive armament. In the crucial field of defence suppression weapons the new ALARM detection and guidance system complements the unique capabilities of the missile and permits the detection and destruction of radars prior to penetrating enemy territory.



- 1 *Buccaneer S.2 equipped with Sea Eagle.*
- 2 *Sea Skua launched from RN Lynx.*
- 3 *Sea Skua Seeker.*
- 4 *Tornado F-2 equipped with Sky Flash.*
- 5 *Tornado GR.1 equipped with ALARM.*
- 6 *ALARM seeker.*
- 7 *Millimetre Wave Active Anti-armour demonstrator seeker.*
- 8 *Blindfire K band Tracking Radar gives 24 hours capability to the Rapier LLAD system.*

For the future, our millimetre wave technology supports some of the most advanced anti-armour air-launched weapons, under development to meet the ever-increasing combat capability of large armoured forces.



# Land Systems

When messages, goods, munitions, vehicles or people are on the move, our land-based systems capability has a role to play.

In communications, we carry voice messages and computer data streams with or without encryption, over all distances: via satellites beneath the ionosphere and by line-of-sight. We integrate complete systems for business, broadcast and defence applications.

On the battlefield we provide a full capability for command, communications, control and intelligence, C<sup>3</sup>I, as well as innovative control and sensing for accurate gunnery for AFVs and artillery.

Our radar air defence capability ranges from long range 3D surveillance to tracking and weapon control radars for short range LLAD. In addition, in the civil sector, we supply air traffic control radars and related airfield systems.

We supply systems which protect public buildings, installations and perimeters, and identify movement on the battlefield. Advanced thermal imaging systems, hand-held and vehicle mounted, include indirect-view imagers based on the UK's Thermal Imaging Common Modules, for which we are prime contractors.

Our highway safety systems protect the environment in areas such as tunnels whilst our EMC testing facilities are serving the automotive industry, all helping to make driving safer and more reliable.

Main photograph:  
Martello 3D air defence radar.

- 1 Typical satellite earth station: Standard 'B' at Nepal.
- 2 The MP Cellnet mobile telephone, one of our wide range of mobile and radio telephone systems.
- 3 Our 'Mogul' modular gun laying system with 'MARCAL' calibration system fitted to a self propelled 155mm howitzer.
- 4 High power radio and TV broadcast transmitters.
- 5 Main pack version of our Scimitar V military communication system.



Our land based systems capability covers:

- Armoured fighting vehicle systems
- Integrated land communications
- Encryption
- Battlefield C<sup>3</sup>I
- Radars
- Fuses and Ground sensors
- Training simulators
- Air traffic control
- Air defence
- Highway safety
- Perimeter protection and security
- Electro-Optical systems
- Earth stations



Main photograph:  
Marksman LLAD gun turret for fitment to all types of MBT.

- 1 Challenger and Chieftain tanks use our thermal imaging equipment and digital fire control system.
- 2 Distributed C<sup>3</sup>I system for Royal Artillery - BATES.
- 3 This indirect view thermal imager is serving armed forces of several nations.
- 4 Tactical low-level radar Type S7.
- 5 Long-range tropospheric scatter communication systems.
- 6 Our Claymore digital relay system.
- 7 Quick fire gun battery control; autonomous ballistic capability.



# Sea Systems

Involvement in naval and mercantile marine operations, worldwide, covers the design, build and through-life support of ships themselves and a great variety of their most vital systems. Our shipyards build and repair vessels ranging from frigates to mine countermeasures vessels and integrate complete ship systems to individual requirements, for new building and for refit.

We supply the most advanced systems for fighting ships and submarines, including surveillance and tracking radars for missile and gun control, navigational aids both inertial and laser-based, ASW sonar systems, avionics and night attack systems for naval aircraft, carrier landing aids and comprehensive radio communications. We back this up with the design and supply of ship control and surveillance systems and power supplies, plus efficient degaussing and cathodic protection equipment and aids to testing, calibration, simulation and training.

For mercantile ships, our Oceanray Satcom and Oceanlink marine radio installations are backed by a worldwide service from 350 depots and agencies. Our integrated vessel tracking system with radar, communications and displays, aids safe passage in and from harbours.

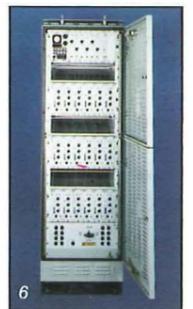


**Our comprehensive capability covers:**

- **Shipbuilding for the world**
  - Frigates
  - Corvettes
  - Ocean patrol ships
  - Surveillance patrol vessels
  - Logistic support vessels
  - Mine countermeasures vessels
  - Hydrographic survey ships
- **Shipbuilding services**
  - Combat systems engineering
  - On-line, yard-to-customer communications
- **Radar systems**
  - Surveillance
  - Tracking
  - Fire control
  - Ship defence
  - Coastal defence
- **Navigational systems**
  - Compass stabilisers
  - Laser INS
  - Echosounders
- **Communications systems**
  - Speech or data
  - MF HF or VHF
  - Satellite
- **Weapon systems**
  - Missile
  - Gun
- **Battery monitoring**

*Main photograph:  
Our Yarrow shipyards at Scotstoun on the Clyde has full facilities for naval and marine shipbuilding.*

- 1 We supply a range of Yarrow frigates to suit customer requirements. HTMS Makut Rajakumarn is in service with the Royal Thai Navy.
- 2 Latest Royal Navy Type 23 frigate at launch in our Yarrow yard.
- 3 Shipborne Secure Satellite communications terminal.
- 4 Weapon control. Sea Dart radar and control system.
- 5 Our Type S1810 frequency agile radar is optimised for shipborne and coastal defence roles.
- 6 We supply gyro compass and magnetometer-controlled degaussing systems for ships and submarines.
- 7 Tracker radar Type 1802SW for control of Seawolf ship defence missile, also incorporating V3800 optronic head based on our thermal imaging common modules.
- 8 Our lightweight ASW sonar processing system is fitted to all Royal Navy helicopters.
- 9 Ship sonar system for naval submarines and surface vessels includes advanced towed array processing.
- 10 Our ICS 3 communications system for naval ships is in widespread service in the Royal Navy and has been ordered for several other navies.



- Ship control and surveillance systems
- Ship protection
  - Degaussing
- ASW sonar systems and towed arrays
- Systems for naval aviation
  - Carrier landing aids
  - Night attack FLIR systems
  - Avionics

# Electronic Warfare

Threat and counter threat in electronic warfare are of ever increasing importance in modern combat operations whether by air, land or sea. The detection of enemy radar signals and their jamming and deception are part of the vital suite of "electronic armour" which is necessary for survival in the 1990's.



The Harrier GR.5 equipped with ZEUS Integrated Defence Aids Suite.

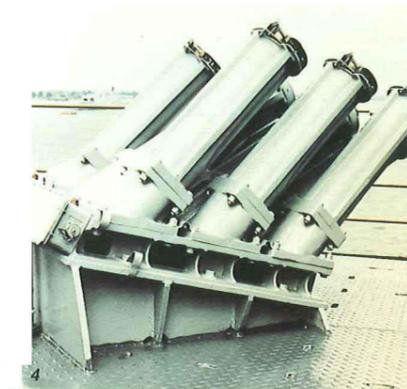


- 1 RAF Tornado fitted with Sky Shadow.
- 2 Sky Shadow pod.
- 3 Sky Shadow ECM pod in Electronic Warfare Evaluation Facility.
- 4 SIREN rocket launched radar decoy.
- 5 TOAD ship decoy.
- 6 MENTOR Target Acquisition system
- 7 HERMES application: a land-rover based system to provide army commanders with tactical and strategic information.

Our electronic support measure (ESM) systems are highly intelligent computer based systems which allow very precise analysis of enemy radar signals and the extraction of considerable amounts of valuable intelligence. Usable by land, sea or air they enable an accurate assessment of enemy intentions and activities to be made whilst remaining in a completely passive regime.



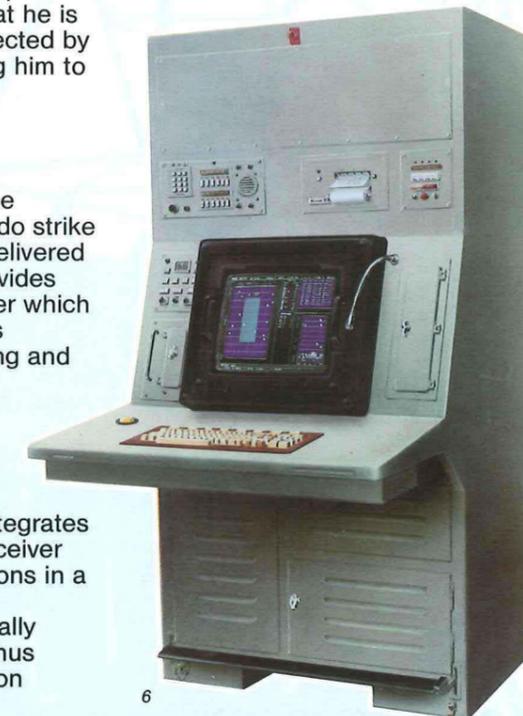
For the future GEC-Marconi is producing advanced concepts such as a parachute decoy (SIREN) and a towed ship decoy (TOAD) to provide "last-ditch" defence by seducing in-coming missiles which have evaded all of the outer defences.



Our radar homing and warning receivers are a standard fit for all RAF front-line aircraft including Phantom, Harrier, Jaguar and Tornado. They provide the pilot with instant knowledge that he is being illuminated and detected by enemy radar thus enabling him to take avoiding action.

Our Sky Shadow pod is the standard fit for RAF Tornado strike aircraft and those being delivered to foreign air forces. It provides active jamming in a manner which destroys an enemy radar's capability for target tracking and fire control.

The later ZEUS system integrates both the radar warning receiver and active jamming functions in a single integrated suite of equipment which is internally mounted in the airframe thus avoiding the loss of weapon stations.

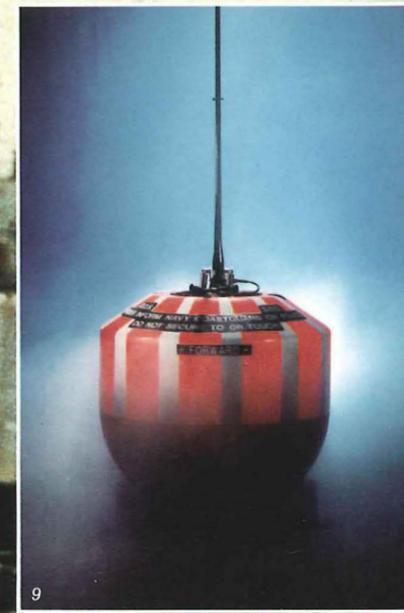
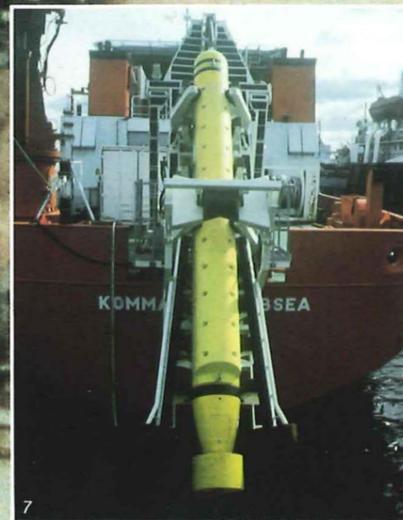
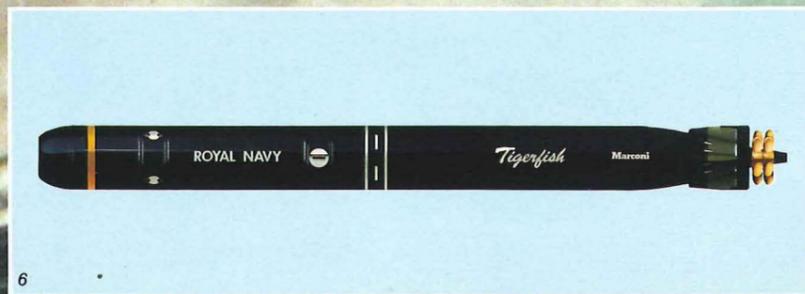
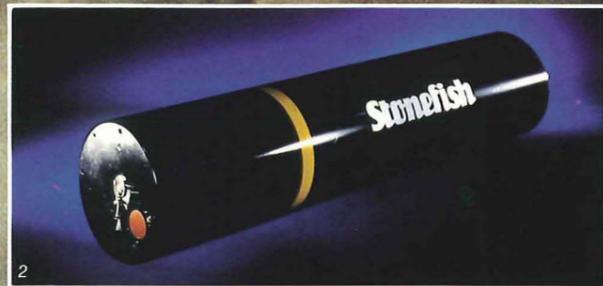


# Undersea Systems



Of all environments in which we operate, that beneath the sea demands special skills and experience. We have acquired these principally in subsea defence and energy production and in adding to hydrographic knowledge. This expertise is especially important in view of the great potential of Ocean Space, a vast world still largely unexplored.

We are the principal contractor to the British Ministry of Defence for the design and manufacture of all types of torpedoes. The target seeking Sting Ray which can be launched from a wide variety of aerial, surface and sub-surface platforms is the most advanced lightweight ASW torpedo in service in the world. We have successfully completed the development and manufacture of the heavyweight wire guided Tigerfish torpedo and are in full scale development with its successor, the Spearfish, which is a world leader in its class. Our intelligent mines guard coasts, inlets and waterways, discriminating between targets by means of in-built programs.



## MUNITIONS

- Torpedoes
- Mines

## SUBMARINE ON-BOARD SYSTEMS

- Propulsion controls
- Sonars
- Navigation
- Communications
- Rescue buoys
- Battery monitoring

## OCEAN SURVEY SONARS

- Deep ocean multisensor
- Sector scan

## COMMUNICATIONS

- Surface-to-diver

## OFFSHORE

- Subsea completion
- Remote wellhead control
- Platform electronics
- Remotely operated subsea vessels

For energy production we supply 'fail safe' control electronics for remote subsea wellheads and controls and displays for production platforms. Our remotely operated vessels have proved successful in subsea inspection, maintenance and recovery operations and, for divers, our communication system is a valuable aid.

We supply sonar processing and sensing systems for submarines, with in-built or towed hydrophone arrays as well as compass stabilisers and communication systems, and can supply laser-based INS, whilst our submarine indicator buoys are lifelines for submariners.

Our sonar experience is also applied to underwater survey and inspection, ranging from sector scan for salvage and minehunting, to deep ocean survey.

1 Our Sting Ray, lightweight torpedo has a wide variety of potential launch platforms, making it readily available for tactical deployment. Several thousand are on order.

2 Stonefish intelligent naval ground mine.

3 Hammerhead advanced sea mine.

4 Our Tigerfish is a submarine-launched heavyweight torpedo, for use against other submarines and surface ships.

5 Our Spearfish torpedo is the Royal Navy's heavyweight torpedo for the 1990's.

6 Our Tigerfish torpedo is the present standard heavyweight system for the Royal Navy.

7 Side-scanning towed sonar, one of the sensors used in Gloria deep ocean survey system.

8 Dragonfly remotely operated submersible (developed by GEC Avionics in conjunction with OSEL).

9 Type 639 submarine indicator buoy, the submariner's lifeline.

# Total Systems Capability

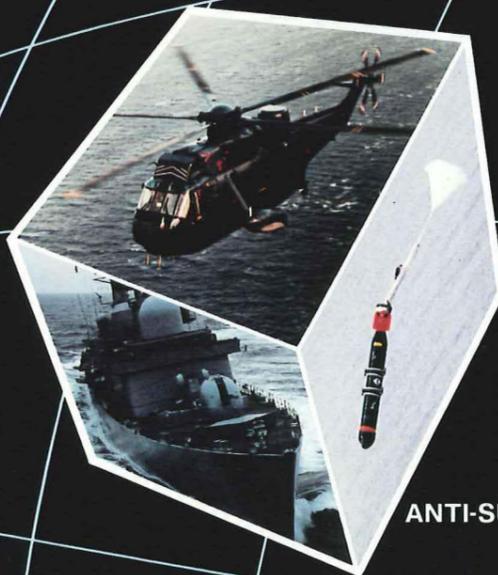
GEC-Marconi can offer the complete range of Defence Electronics capability for any application in Space, Air, Land or Sea.



**COMMUNICATION NETWORKS**



**CIVIL AIR TRAFFIC SYSTEMS**



**ANTI-SUBMARINE WARFARE**



**NIGHT ATTACK SYSTEMS**



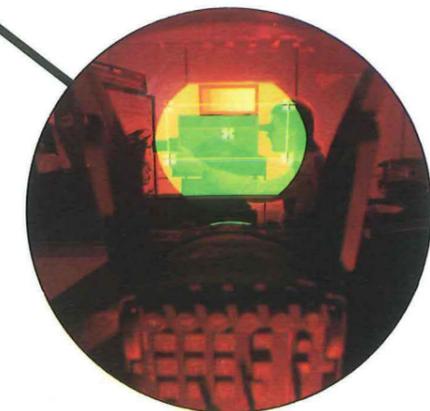
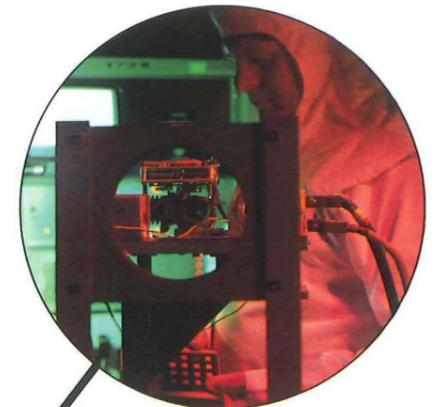
**BATTLEFIELD SYSTEMS**

# Total Support

GEC-Marconi is part of The General Electric Company plc and has the financial strength and added capabilities of the UK's largest electrical and electronics manufacturer.

GEC companies manufacture consumer goods, power generation and distribution equipment, transportation systems, telecommunications, automation and electrical systems, in addition to the wide range of defence and electronic systems made by GEC-Marconi companies.

Against this background of experience, GEC-Marconi offers a complete service from design to through-life support.



- SYSTEM STUDY**
- Feasibility studies
  - System design

- DESIGN**
- Computer-aided
  - Design authority

- PROJECT MANAGEMENT**
- Design and build
  - Turnkey

**ENGINEERING**

- System engineering
- Software engineering
- Multi-disciplined
- Rigs and simulators

**MANUFACTURE**

- Computer-aided
- Versatile
- High throughput capability
- Own ATE

**QUALITY ASSURANCE**

- Military and commercial approval
- Environmental testing
  - Type approval
  - In-production

**RESEARCH AND DEVELOPMENT**

- Enabling technologies
- New product development
- Customer research projects

**SUPPORT**

- Customer-orientated
- Training
- Aids and simulators
- Test equipment
- Publications
- Technical representation
- Spares and service

# Research

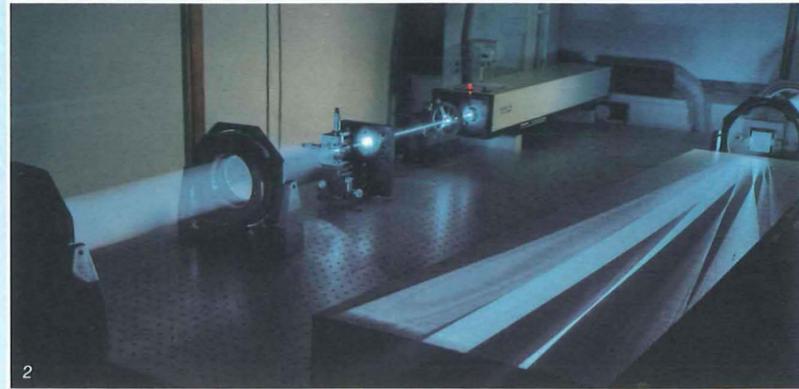
In GEC-Marconi, specialised research teams create the enabling technologies for new products in all their diverse applications.

GEC-Marconi has a central research facility employing 750 scientists and engineers at Great Baddow, backed by specialised laboratories located within the principal companies of the group. This arrangement ensures that innovation in our products is always practically based and customer-oriented.



The Micro-circuit Assembly Techniques Facility's (MATF) proven expertise, capabilities and technology, in specialized component and subsystem manufacture, provide GEC-Marconi companies with a unique resource which supports and complements their systems business. A key element in the Facility's success over some 21 years in servicing the requirement of GEC systems companies, has been its ability to produce innovative and practical engineering solutions to technical challenges in advanced military and professional systems applications.

Specific examples of the MATF's work are its state-of-the-art capability in advanced interconnection technology, including flexible and flexi-rigid printed circuit assemblies, and on advanced hybrid integrated circuit design and manufacturing expertise, which can provide designers with new insights in systems implementation.



*Main photograph:  
One of the largest anechoic chambers in Europe, providing a comprehensive antenna testing facility.*

- 1 GEC-Marconi Research Centre, Great Baddow.
- 2 Holography applied to thin lens design. Laser illumination illustrates the effectiveness and range of focal lengths available.
- 3 Surface mount technology: multilayer circuit board with expansion-matching metal core.
- 4 Example of current 1GHz bandwidth Bragg Cell.
- 5 Flexible printed circuit artworks.

# Constituent Companies

GEC-Marconi is a GEC profit centre which co-ordinates a group of companies, each expert in its field, fully equipped to respond to its customers, and backed by group resources. Many companies are market leaders in their fields.

For purposes of co-ordination, the companies are further grouped, as follows:

GEC Avionics Limited (Rochester 0634 44400)  
associated with:

GEC Avionics Incorporated (Atlanta 404 448 1947)

Lear Astronics Corporation (Santa Monica Ca. 213 452 6000)

Developmental Sciences Corp (Ontario Ca. 714 947 7600)

GEC Sensors Limited (Basildon 0268 22822)

Marconi Communications Systems Limited (Chelmsford 0245 353221)

Marconi International Marine Company Limited (Chelmsford 0245 261701)

Marconi Defence Systems Limited (Stanmore 01 954 2311)

Marconi Space Systems Limited (Portsmouth 0705 664966)

Marconi Command and Control Systems Limited (Camberley 0276 63311)

Marconi Radar Systems Limited (Chelmsford 0245 267111)

EASAMS Limited (Camberley 0276 63377)

Marconi Underwater Systems Limited (Waterlooville 0705 264466)

Yarrow Shipbuilders Limited (Glasgow 041 959 1207)

Marconi Italiana S.p.A. (Genova Cornigliano 010 60021)

Cincinnati Electronics Corp (Cincinnati 513 733 6100)

Canadian Marconi Company (Montreal 514 341 7630)

AI Radar  
 Air Traffic Control Systems  
 Acoustic Processing Systems  
 Actuation  
 Airborne Displays  
 Airborne EW  
 Airborne ECM  
 Airborne ESM  
 Aircraft Flight Control Systems  
 Air Data Systems  
 Air Defence Radars  
 Aircraft Updates  
 Amplifiers  
 Antennas, Ground and Space  
 Antennas Masts  
 Anti Aircraft Systems  
 Anti Armour Missile Systems  
 Anti Invasion Mines  
 Anti Radar Missile Systems  
 Anti Ship Missile Systems  
 Anti Submarine Mines  
 Anti Submarine Systems, Airborne  
 Anti Submarine Systems, Shipborne  
 Artificial Intelligence Applications  
 Artillery Systems  
 Attitude References  
 Attitude Sensing and Control Systems  
 Automatic Flight Control  
 Automatic Landing  
 Automatic Powerplant Testing  
 Automatic Stabilisation  
 Automatic Test Equipment  
 Automatic Weather Broadcast Systems  
 Autothrottle  
 Avionics

Battlefield Communications  
 Battlefield Control  
 Battlefield Surveillance  
 Broadcast Radio and TV Transmitters  
 Broadcasting Systems  
 Broadcasting Transmitters

Car Telephones  
 Carrier Landing Aids  
 Cathodic Protection  
 Coastal Defence and Sonar Surveillance  
 Combat Net Radio Systems  
 Combat Radios  
 Combat Systems Engineering  
 Command and Control Systems  
 Command and Intelligence Systems C<sup>3</sup><sub>I</sub>  
 Commercial Shipbuilding  
 Communication Control

Communications Systems and Networks  
 Composite Manufacturing  
 Computer Aided Design and Manufacture  
 Computer Software  
 Computer Systems  
 Consultancy  
 Control Systems  
 Converters, Up and Down  
 Cryptography

Data Links, Missile and Aircraft Decoders  
 Degaussing  
 Demodulators  
 Digital Data Transmission Equipment  
 Diver Communication Systems  
 Doppler Velocity Sensors and Navigators

Earth Observation Data Processing Systems  
 Earth Observation Satellites  
 Earth Stations  
 Echosounders  
 ECM Systems  
 Electronic Displays Head Down  
 Electronic Displays Head Up  
 Electro-Optical Systems  
 ELINT Systems  
 EMC Test Facilities  
 Encryption Devices  
 Engine Control  
 Engineering Test Rigs  
 Environmental Testing  
 ESM Systems  
 EW Systems  
 EW Software Support Systems

Field Service and Support  
 Fighting Vehicle Systems  
 Fire Control Systems  
 Flight Control Systems  
 Flight Information Systems  
 FLIR Systems  
 Fly by Light Control  
 Fly by Wire Control  
 Frame Synchronisers  
 Frequency-Hopping Equipment  
 Frigates  
 Fuses

Ground Communication Equipment  
 Gun Calibration  
 Gun Laying  
 Gyroscopes, Inertial and Control

Hand-Portable Transmitter/Receivers  
 Head Down Displays  
 Head Up Displays  
 HF Communication Systems  
 High Power Amplifiers  
 Highway Safety  
 Holographic Systems  
 Hydrographic Survey Ships and Systems

Independent Evaluation  
 Inertial Measuring Units  
 Information Systems  
 Installation Services  
 Integrated Communication Systems  
 Intelligent Mines  
 Interactive Telephone Banking Systems  
 Intercept Sonars  
 Interrogable Alarm Units

JTIDS Data Link Systems

Land Based ESM  
 Land Vehicle Systems  
 Laser Based Systems  
 Laser Inertial Navigators  
 Line of Sight Microwave  
 Logistic Support  
 Logistic Support Vessels  
 Long-range Communications  
 Low Level Radar

MIL-STD Computers  
 MIL-STD Data Bus Systems  
 Manpack Radio Equipment  
 Mapping Sonar  
 Marine Trenching System  
 Maritime Aircraft Systems  
 Message Switching  
 Microprocessors  
 Microwave Transmission  
 Military Communications  
 Mines and Missile Fuses  
 Missile Guidance and Control  
 Mobile Communication Systems  
 Mobile Radio Systems  
 Mobile Telephone Systems  
 Modems  
 Modulators  
 Muzzle Velocity Radars

Naval Communications  
 Naval ECM  
 Naval ESM  
 Naval EW  
 Naval Ground Mines

Naval Mine Countermeasures Systems  
 Naval Offboard Active Decoys  
 Naval Shipbuilding  
 Navigation and Attack Systems  
 Neutron Devices  
 Night Attack Systems  
 Night Vision Goggles  
 Noise and Vibration Control

Ocean Mapping and Survey Systems  
 Ocean Patrol Ships  
 Offshore Systems

Payloads, Satellite  
 Perimeter Protection  
 Pipe and Cable Laying Subsea  
 Platform Electronics  
 Power Conversion  
 Powerplant Systems  
 Private Mobile Radio  
 Project Management  
 Propagation Analysis  
 Propulsion Systems

RPV Systems  
 Radar Air Land Sea  
 Radar Data Processing  
 Radar Warning Receivers  
 Radar Warning Systems  
 Radio Broadcasting Transmitters  
 Radio Communications  
 Radio Navigation  
 Radio Receivers  
 Rangefinders; Range Radars  
 Recording Systems  
 Remote Sensing Data Processing Systems  
 Remote Sensing Satellites  
 Remotely Operated Vessels  
 Remotely Piloted Vehicles RPV  
 Research

SSR Systems  
 Satellite Aircraft Terminals, Military  
 Satellite Antennas  
 Satellite Attitude Sensing/Control  
 Satellite Data Handling Systems  
 Satellite Earth Stations  
 Satellite Ground Control Equipment  
 Satellite News Gathering  
 Satellite On-board Systems  
 Satellite Payloads  
 Satellite Propulsion  
 Satellite Ship Terminals  
 Satellite Structures  
 Satellites, Communication, Remote Sensing, Scientific  
 Satellites, Military and Civil

Scientific Satellites  
 Sea Bed Mapping System  
 Sealed Service Support  
 Secure Communications Modems  
 Secure Communications Systems  
 Secure Hand Held Radios  
 Secure Speech/Data Systems  
 Security Systems  
 Ship ASW Systems  
 Ship Control  
 Ship Defence  
 Ship Power Control  
 Ship Protection  
 Shipbuilding Services  
 Signal Processing  
 Simulation  
 Simulators  
 Software Engineering  
 Sonar Systems  
 Space Qualification Facilities  
 Space Radiometers  
 Space Sensors  
 Space Systems  
 Space Synthetic Aperture Radars  
 Spares and Service  
 Special to Type Test Equipment  
 Speech Recognition  
 Speech Synthesis Devices  
 Speed Recognisers  
 Stores Management  
 Submarine Indicator Buoys  
 Submarine Systems  
 Submunitions  
 Subsea Completion  
 Surveillance Patrol Vessels  
 Surveillance Systems  
 Synchronisers  
 Synthesisers  
 Synthetic Aperture Radars  
 System Analysis  
 System Updates

T<sup>2</sup>A - Total Terrain Avionics  
 Tactical Radios  
 Tactical Systems  
 Tactical UHF Relay Systems  
 Tank Systems  
 Telecine Systems  
 Telephone Announcement Systems  
 Television Receive Only Systems  
 Terrain Referenced Navigation  
 Test Systems  
 Thermal Imaging Systems  
 Threat Warning  
 Through Life Logistic Support  
 Torpedoes Heavyweight  
 Torpedoes Lightweight  
 Torpedo Systems  
 Total Terrain Avionics

Towed Airborne Decoys  
 Towed Offboard Active Decoy Tracking Systems  
 Tracking Systems Automatic  
 Training and Training Aids  
 Train Radio  
 Transceivers  
 Transmitters  
 Transmission Line Components  
 Troposcatter Systems  
 Tropospheric Scatter Equipment  
 Trunking Systems  
 Turret Systems

UHF Communication Systems  
 UHF Systems  
 Underwater Systems  
 Unmanned Aircraft and Systems

VHF Communication Systems  
 VHF Radio Transmitters  
 VHF Systems  
 VLF Communications  
 VLSI Design  
 Vessel Tracking Systems  
 Vocoders  
 Voting Systems

Warshipbuilding  
 Weapon Guidance  
 Weapon System Integration  
 Weapon Systems Management  
 Wellhead Controls

for further information on products and the companies in the group which supply them please contact in the first instance:

The Marketing Manager

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This brochure gives only a general description of the products or services and shall not form part of any contract. From time to time changes may be made in the products or the conditions of supply.

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**GEC-Marconi**

**DEFENCE ELECTRONICS – RIGHT ACROSS THE BOARD**