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### GEC-Marconi branch offices



### Quality service for quality products

long-term product support from the manufacturer. Expert product support representation is offered by



Quality software, services and support



GEC-Marconi InFlight Systems is uniquely qualified to tem. Modular equipment design coupled with a stantures ever offered for individual seat entertainment

ment, catalog or duty-free shopping, communication sages, eases tracking of supplies and service of meals instant sales accounting and inventory reports.







Ridgewood Corporate Square 310 120th Ave NE, Suite 108 Bellevue, Washington 98005



## The Ultimate Entertainment and Cabin Services System











EC-Marconi InFlight Systems, Inc. (GMIS) provides a complete line of on-board, avionic-integrated, interactive entertainment and cabin management systems designed specifically for commercial aircraft. These sophisticated and unique electronic systems provide the most comprehensive and integrated range of enhanced facilities and services ever offered to airline passengers, cabin crew members and management.

Every airline passenger is a potential, eager customer with time and disposable income. The GMIS quality entertainment systems attract passengers, thereby allowing the airline who chooses these systems to take advantage of this previously ignored revenue base. Both seatback and seatarm versions are available for integration into every existing passenger seat envelope, for every aircraft configuration. Custom mounting arrangements are also available for special requirements as defined by the airline.

The modular design of these high quality systems promotes easy expansion or enhancement to satisfy the varying needs of world-class commercial airline companies. An airline can begin with a basic individual video and audio system; upgrade to include video games and telephone services; and then further expand into the most sophisticated interactive entertainment and services system to take advantage of all the revenue-generating services and technical enhancements provided by GMIS. As the system expands, services expand.

GMIS offers a product line with three tiers of system sophistication—Model 2200 (video and audio, with optional video games and telephone service); Model 2200IK (interactive Model 2200); and Model 2700IK (enhanced Model 2200IK). Designed for first, business and economy classes, these systems can be installed all at once or in a phased approach, as determined by the airline. Since all equipment is fully compatible from one model to the next, support and maintenance requirements are simplified.

#### Model 2200—The Initial Building Block

For baseline installation, GMIS offers its Model 2200 with in-flight video and audio entertainment linked directly to the passenger seat. Each passenger seat terminal in the GMIS 2200 series consists of a headset;

5.7 inch brightness adjustable color video display screen; digital passenger control unit; and optional handset for video games and telephone services. Model 2200 uses an FM/

FDM copper-based network to distribute, from a video control center panel, up to 12 video programs and 72 audio channels. Separate copper-

In-Flight Facili	ties 1/3
Films	Ó
Music	
(Gooo Games	
more ? help	more

based networks are used to distribute the optional video games and telephone services. With this configuration, the following in-seat selections are available:

- Multi-lingual, feature-length videos:
- Digital stereo programs:
- State-of-the-art video games: and
- Telephone services.

#### Model 2200IK—The Touch Screen Benefit Model 2200IK compliments Model 2200 with the addition

of a fast and efficient interactive data network with expandable memory. This network increases the airline's revenue potential



by introducing additional entertainment, information and data processing facilities in a modular and flexible format. It maintains an online data base storage device containing the operating data base, software and cabin management files necessary to provide full interface with other avionic systems on board. This model offers passen-

gers and attendants all of the basic audio and video services of the Model 2200, plus such features as:

- More sophisticated electronic games;
- Passenger information:
- Travel services;
- Worldwide communication, including facsimiles;
- Duty-free and mail-order shopping via digitized pictures and text:
- Business and educational software; and
- Cabin management.

Model 2200IK replaces the video control center panel featured in Model 2200 with a high performance cabin systems control panel. This panel integrates all of the airplane cabin equipment control software and also provides a platform for airline-specific applications, such as cabin management. The cabin management facility offers in-cabin automation to both ground and cabin crew, resulting in improved efficiency, inventory control and revenue accountability. It can be custom-tailored for each individual airline based on operational procedures, specific aircraft types operated, maintenance philosophies and other special airline requirements.

The cabin systems control panel provides the cabin staff with the means to control and monitor all system facilities, such as:

- Map video and audio sources to FM/FDM output channels;
- Define the overhead video monitor channel selection;
- Determine passenger accessibility;
- Define specific applications or reboot the system;
- Provide interface to the maintenance facilities; and
- Determine seat configuration.

This is accomplished by means of an infrared touch screen terminal with backlight and user-friendly color graphics menus. This touch screen has a high quality, high resolution 10.4 inch diagonal color LCD coupled with an AT-style splash-proof keyboard. The keyboard features a tiltable trackerball pointing device for ease of operation and control of the various video and audio sources. For maintenance efficiency, it also has a detachable cord and is easily replaceable.

#### Model 2700IK—The Fully Interactive System

As the fully interactive in-seat entertainment, telephone and services system, Model 2700IK is designed to interface with new generation aircraft cabin management systems. These new generation aircraft cabin management systems distribute video programs provided by Model 2700IK, together with their own audio programs and passenger service system facilities.

In addition, Model 2700IK provides a high-capacity fiber-optic and copper-based data distribution network as well as a separate but highly integrated telecommunications distribution network. This provides the airline with greater revenue potential and offers flight attendants and passengers truly interactive facilities for inflight entertainment, information, shopping, communications, business and courtesy services. Once the basic hardware is installed on the aircraft, these applications are easily added to or removed from the system by simple software updates to suit airline requirements. The airline can then opt to offer their passengers a basic individual video system, an in-seat telephone and video games system or a fully interactive entertainment and services system.

Model 2700IK, like the 2200IK, provides communication services from aircraft-to-ground and ground-to-aircraft, a currency exchange facility with a data base for up to eight convertible currencies and the ability to quickly download information to the ground. Passengers can immediately access the aircraft's position, airspeed, altitude, distance travelled, estimated arrival time, destination weather and other flightworthy and destinationoriented information. They can even make flight, hotel, auto and theater reservations.

This expanded system also provides for the storage, transmission and display of airline-selected advertising material. International and destination advertisers can target their market, and passengers can take advantage of the sponsored information displayed on the individual video monitors. These advertisements, in turn, generate additional income for the airline and reduce programming costs.

As with the 2200 series, each passenger seat terminal consists of a headset; 5.7 inch brightness adjustable color video display screen; digital passenger control unit; and interactive handset which provides each passenger with their own high quality personal service and entertainment facility.

#### Model 3200—The Ultimate Entertainment and Services System

GMIS also offers its Model 3200, a full-up fiber-optic system with unsurpassed data transfer capability. This model provides all the facilities of the Model 2200IK and a more sophisticated and comprehensive version of the Model 2700IK with the added capabilities of multimedia and digital video. The touch screen feature offers integrated cabin management for in-flight sales and accounting; cabin supply and maintenance reporting; and operational and procedural information. This complete cabin management system provides ease of operation for flight attendants, convenience for passengers and precise accountability for airline management.

Fiber-optic usage ensures aircraft weight is minimized. Possible electromagnetic interference caused by copper wire cabling (which provides the necessary data throughput) is virtually

eliminated. And, fiber optics provides the necessary bandwidth (not practical with copper wire cabling) to accommodate planned future upgrades and enhancements to the facilities while maintaining electrical isolation between the individual units.

Flight Facilities 2/3

#### The GMIS Commitment

As an entertainment and service, cabin management and processing/relaying of information facility, the GMIS series of systems provides a valuable service to both the airline and its passengers. Simply stated, an airline choosing to implement a GMIS individual video and service system will experience improved operations and increased revenue along with increased passenger satisfaction.

Currently the only company offering a complete series of uniquely expandable systems including a working fiber-optic distribution system in its most advanced models, GMIS is the world leader in the development of these unique interactive distribution systems for commercial airline applications. As the systems integrator for these individual entertainment and services systems, GMIS offers a single point of contact both pre- and postcontract by maintaining relationships with its service suppliers or those selected by the airline. GMIS will interface directly with



whichever suppliers are chosen to ensure that airline requirements are met in full.

System solutions will be backed by complete program management service, ensuring delivery and implementation meet the needs and schedules of the airline with minimal disruption of operation. And, as the design authority for the complete 2200/ 2700 series and full-up Model

3200, GMIS will maintain the design, integration, testing and airborne qualification responsibilities for this network using its broad range of FAA- and CAA-approved facilities. The company will not only install the hardware, but will also provide performance and maintenance updates for the software. A team is dedicated to work hand-in-hand with airline personnel to substantiate data and acquire certification. GMIS will offer worldwide product support—spares/support equipment, training and technical field service—by utilizing GEC's broad resources of trained individuals.

GEC-Marconi InFlight Systems, Inc. is a company of GEC-Marconi Limited, a wholly owned subsidiary of the General Electric Company of England. As one of the largest electronics businesses in the world, GEC has pioneered the development of high-technology avionic systems for a wide range of commercial and military aircraft for over 50 years. The company's products are in use in nearly 200 airlines and air forces worldwide.

GEC has provided performance solutions for voice and data communications, flight control, navigation, identification, flight data, electronic warfare, weapons systems and now in-flight entertainment. The company is widely acknowledged for the quality of its hardware, its expertise as a system design authority and as a prime contractor. Its vast technological developments and manufacturing experience create a reliable, cost-effective approach to fulfilling inflight entertainment system requirements.



InFlight Systems, Inc.

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## QUALITY SOFTWARE AND SERVICES... We Deliver





Individually tailored software integrated with proven avionics hardware results in the ultimate entertainment and cabin services system.

The hand-held controller with its easy operating keypad, credit card reader and built-in telephone allows each passenger to comfortably: Select 12 tri-lingual videos and 72 digital audio channels from an unequaled supply of music, film and TV programs; play video games; shop from duty-free, Gifts-on-Arrival and mail-order catalogs; arrange flight, car, hotel or event reservations and determine flight destination and ETA.

Generate revenue with airline-tailored advertising controlled, along with inflight and safety information, by the flight attendants. Supplies, meal and beverage services, sales and inventory reports as well as air-to-ground data exchanges are all easily handled by interfacing with the onboard interactive computers.

Committed to total support. These services and associated software are provided and can also be managed by GEC-Marconi InFlight Systems.



For more information contact GEC-Marconi InFlight Systems Ridgewood Corporate Square 310 120th Ave. N.E., Suite 108 Bellevue, WA 98005 Phone 206-455-9960 FAX 206-454-1895

## THE COMPETITIVE EDGE... We Deliver



Every airline passenger is a potential captive customer with time and disposable income. The airline who chooses one of GEC-Marconi's innovative, integrated, interactive entertainment/cabin management systems can have the competitive edge required for increased airline revenue by:



- Tapping into this captive revenue base.
- Improving cabin crew efficiency, inventory control and revenue accountability.
- Greatly improving customer satisfaction with enhanced facilities/services.

We tailor programming and services around each airline's unique needs and requirements. This exclusive tailoring, along with our unequaled supply of programming services and associated software, is provided and can also be managed by GEC-Marconi InFlight Systems, Inc.

For more information contact GEC-Marconi InFlight Systems, Inc. Ridgewood Corporate Square 310 120th Ave. N.E., Suite 108 Bellevue, WA 98005 Phone 206-455-9960 FAX 206-454-1895

## Product And Commercial Flexibility... Video Only To Integrated Cabin Systems...





## Modular Equipment Design Coupled With Distribution Systems Including Our Exclusive Airborne Fiber Optics Allow:

#### PASSENGERS' PERSONAL SEAT CAPABILITY TO:

- View Any Of 8 Tri-Lingual Movies
- Enjoy Digital Stereo Music
- Telephone and FAX Office, Home, Etc.
- Purchase Duty Free
- Purchase Gifts On Arrival

#### CABIN CREW TO:

- Load New, Update Existing Data
- Initiate Pre-Flight Tests
- Update Passenger Shopping Data, Cabin Supply Inventory

#### GEC-Marconi InFlight Systems

- Shop By Catalog
- Play Video Games
- Arrange Flight, Car, Hotel, Event Reservations
- Determine Flight Destination ETA
- Print Passenger Accounts, Cabin Management Reports, Maintenance Reports, Customs Forms
- Off-Load Data To Storage Devices

For more information contact GEC-Marconi InFlight Systems Ridgewood Corporate Square 310 120th Ave. N.E., Suite 108, Bellevue, WA 98005 Phone (206) 455-9960 FAX (206) 454-1895



#### REPAIR WORKSHOP

GEC-Marconi InFlight Systems provides total repair support through the Logistic and Customer Services Division (LCSD) of GEC Avionics.

DELIVE

An approved repair workshop for civil and military equipment, the Repair Department is dedicated to the repair task. It provides a 24 hour repair capability for over 2,600 different types of LRUs and modules used on over 70 aircraft, ship and vehicle types. The typical monthly throughput exceeds 600 units involving over 250 separate orders. The technology ranges from thermionic valves to the latest digital microprocessors and optical devices. FAA approved CAA approved AQAP approval

24 hour AOG service

Clean Rooms

Wide range of technology

ATE

Guaranteed turnaround times

Full traceability



A320 Automatic Test Set

Repair Workshop



The Department occupies 34,000 sq ft of factory space air conditioned to FED STAN 209A (Class 10,000). It utilizes some 450 test sets including general purpose Automatic Test Equipment (ATE) and Special-to-Type Equipment (STTE). These Test Equipments are supplemented by a comprehensive inventory of associated test instruments. Facilities include an additional 2,800 sq ft laminar flow super clean room built to US FED STAN 209A (Class 100).

These areas are available for the servicing of precision electromechanical devices such as gyro assemblies, barometric instruments and tape transports, together with the latest generation of analog and digital electronic equipment. Safe Posts for handling static sensitive devices meet exacting industrial standards. Dedicated test and calibration areas are available for the maintenance and testing of optical systems.

All activity in the workshop is tracked and documented with the aid of a modern data collection and processing system. Management of the workshop benefits from this system by having access to the repair status of equipment and can adjust repair programs to minimize cost and turn-around times for the benefit of the customer. Records are available to ensure full traceability of repairs and modifications.

Customers have the choice of several support plans to match particular types of operations. This choice includes:

Fixed price – guaranteed tura-around Cost per flying hour

Industrial Depot Level repair

Ad-hoc repairs

Special maintenance plans

AOG facilities 24 hours per day, 7 days per week.

Any one or combination of these plans may be arranged and embodied in a General Terms Agreement (GTA) or support contract between the customer and GMIS.

For further information please contact



#### **InFlight Systems**

#### **Phone (206) 455-9960** Fax (206) 454-1895. GEC-Marconi InFlight Systems, Ridgewood Corporate Square 310 120th Ave. N.E., Suite 108, Bellevue, WA 98005

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Examples of 1950s to 1990s technology supported

Approved to meet requirements of:

FAA (Federal Aviation Authority)

CAA (Civil Aviation Authority)

DEF STAN (UK) Ministry

AQAP 1 (NATO)

AQAP 13 (NATO)

MIL STD (US Armed Services)

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#### FIELD SERVICE

Expert field service representation is offered by GEC-Marconi InFlight Systems (GMIS) through the Logistic and Customer Services Division of GEC Avionics. Highly qualified field service representatives (FSRs) are mandated to provide a vital supporting link between GMIS and their customers.

Field service staff are able to communicate directly with all departments within GMIS and liaise with the customer at all levels. System Development and Field Trials

Production-line Support

Permanent On-Site Support

**On-Call Support** 

**On-the-Job** Training

Refits, Retrofits and Modifications

Routine Maintenance and Calibration

**Product Support** 

**Customer Queries** 

Service Bulletins (SBs) and Service Information Letters (SILs)



**Production-line Support** 

#### **Field Service and Product Support**

System Our policy of 'active integration' of FSRs into the development and trials phases of the Development and Company's products enables them to supply detailed technical assistance during **Field** Trials subsequent support to our customers. FSRs support production lines both for military and commercial aircraft manufacturers to **Production-line** Support maintain maximum availability of new production equipment. This protects the suppliers delivery schedules and mutual warranty agreements Permanent Customer services provided by our on-site FSRs include:-**On-Site Support** Direct technical and commercial liaison between the customer and all GMIS departments Project continuity during customer staff change-overs Detailed technical assistance. A quick reaction service is available to reduce the 'Down Time' of on-site equipment to a **On-Call Support** minimum. Response times:-US and Europe within 12 hours, worldwide within 72 hours. On-the-Job On-site and on-call FSRs give on-the-job training and instruction, as necessary, in the Training maintenance and operation of systems, LRUs and test equipment supplied by GMIS. The technical and management ability of our FSRs ensures that GMIS field service Refits, Retrofits personnel are competent to manage, service, instruct, carry out our 'hands-on' work and provide full technical support during refits and modifications of customers equipments on location or at GMIS field workshops. Maintenance and Field service personnel offer a management service to provide routine maintenance and Calibration calibration of on-site equipment to the customers requirements. **Product Support** Full product technical support is provided by field service personnel. Product reliability is continuously monitored during regular visits to customers and by the analysis of reliability data received from them. Workshop findings are transmitted immediately to customers when necessary; otherwise a summary is provided on a monthly basis. Field service acts as a point of contact for new or undefined queries, and enquiries. In **Customer** Queries accordance with the WASG all queries are answered within  $2\overline{4}$  hours. Field service modifications engineers produce SBs and SILs in accordance with the

current regulatory standards.

For further information please contact



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and Modifications

Service Bulletins and Service Information Letters

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INTEGRATED LOGISTIC SUPPORT

# DELIVER

Complete integrated logistic support for GEC-Marconi InFlight Systems (GMIS) products is offered by the Logistic and Customer Services Division (LCSD) of GEC Avionics.

GMIS services include management of all ILS activities associated with individual equipment or total systems as well as the implementation of individual elements of the ILS package.

Our specialists are fully conversant with MIL-STD-1388 using in-house Automatic Data Processing (ADP) facilities.

LCSD is a lead organization in the implementation of AECMA specification 2000M, and is fully conversant with AECMA specification 1000D. Full ILS support is available for all commercial and military applications. ILS Management Reliability Predicting Testability Maintainability Life Cycle Cost (LCC) Analyses Spares Provision

Failure Mode Effect and Criticality Analysis (FMECA)

Materials Management

Technical Publications

Training Repairs Field Service



ADP facilities used to create Logistic Support Analysis Records

#### **Integrated Logistic Support**

	Available Services are outlined below:-
ILS Management	Specialists are available to integrate individual elements of ILS into a 'total package'. This is particularly useful to small groups where specific expertise is required to supplement limited resources.
Reliability Predicting	Reliability predictions based on generic design data using MIL-HBK-217 E are carried out either as a specific task or as part of the overall analysis. Component stress analyses can be carried out for use in conjunction with reliability predictions to ensure that component derating criteria are satisfied.
Testability	Our long established expertize in testing and test methods enables our specialists to make recommendations at an early stage of design to ensure optimum testability of the final product with minimum impact on circuit functionality.
Maintainability	Extensive experience in equipment maintenance enables engineers to advise designers on the most practical maintenance features to ensure maximum equipment availability.
LCC Analyses	A range of models is available for LCC analyses based on predicted failure rates and customer utilization requirements. These analyses help to establish the optimum long term support philosophy tailored to specific equipment applications.
Spares Provision	Spares recommendations based on reliability predictions can be made using established models for a range of equipment, fleet size and maintenance programs.
FMECA	Fault analyses can be carried out to functional block level using modeling techniques to meet individual customer requirements. If FMECA is carried out during the early design stage, failure modes can be identified and eradicated, thus minimizing equipment Life Cycle Cost. In addition analyses of the Built In Test (BIT) effectiveness can be carried out using reliability prediction data.
Materials Management	Since the mid 1960s, ATA 200 IP data has been provided for commercial customers. Our in- house system covers all current standards including Spec 2000.
Technical Publications	Modern electronic publishing equipment, compatible with CALS requirements for SGML and IGES, is available for the preparation of all technical data, including manuals. Specialist services include graphic design, technical illustration, typesetting, high resolution digital scanning, lithographic printing and display mounting.
Training	Our well equipped Customer Training School is staffed by professional instructors. A wide range of courses is available including basic principles and specialist technical courses on a wide variety of prime fit systems and test equipment. Courses are available at our Rochester plant or if required at the customer's facility, and are supplemented with fully illustrated training notes.
Repairs	The activities of the Repair Department are centered upon an approved repair workshop where civil and military equipments are handled.
Field Service	A vital supporting link between GMIS and its customers is provided by qualified Field Service Representatives.
	For juriper information please contact

**GEC-Marconi** 

### InFlight Systems

#### Phone (206) 455-9960 Fax (206) 454-1895

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CUSTOMER TRAINING SCHOOL

# **DELIVER**

A wide variety of quality support services is available to GEC-Marconi InFlight Systems (GMIS) customers, including that provided by the GEC Avionics Customer Training School at Rochester, where comprehensive training courses are offered for all levels of management, operational and maintenance staffs.



Overseas students on one of our many training courses

Typical courses cover equipment familiarization, and operational and maintenance procedures for the wide range of avionic systems and equipment manufactured by GEC-Marconi companies.

The training school occupies some 4,000 square feet. Six main classrooms are fully equipped with modern instructional aids including video and projection facilities. A further classroom is equipped with work stations to allow practical application of computer and associated electronic and instrument procedures. **Extensive** Facilities

Comprehensive Instruction

Major Training Programs

Customer Training Scbool

Comprebensive Instruction

Major Training Programs

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The experienced and qualified full-time instructors are responsible for the preparation of their own courses, under the guidance of senior personnel. They are required to be proficient in modern training techniques with a continuous program of advancement in instructional techniques for all staff.

All presentation material, training course notes and literature is provided to support each instructor's requirements by the Technical Publications Section of Logistic and Customer Services Division of GEC Avionics.

The Training School provides courses on a wide variety of modern avionic systems and associated high technology equipment applications.

Major training programs are offered to cover the company supplied equipments for Boeing and the Airbus family of commercial aircraft, and military aircraft typified by the F-16, Panavia Tornado, and the Harrier/AV-8B VTOL aircraft.

These courses include entertainment and interactive cabin management systems, Automatic Flight Control and Direction Systems, Air Data, Auto-stabilization, Autothrottle and Secondary Flight Control Systems as well as other GEC supplied equipment.

Training programs covering Automatic Test Equipment, Head Up Displays, Navigation and Weapon Aiming Equipment, Stores Management, Acoustic Processing Equipment, and Thermal Imaging Applications are also provided.

Software training can also be provided for the above applications.

For further information please contact



#### InFlight Systems

#### Phone (206) 455-9960 Fax (206) 454-1895.

Practical demonstration at work station

Training is designed to ensure that customers obtain the maximum benefit from the use of our products.



Students' rest area

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