



Comprehensive test solutions from Europe's largest test bureau, from fixture kits to turnkey test solutions, including test management

- Comprehensive design to build solutions from MDA to System Test
- Fixturing solutions including kits, customization, and turnkey projects
- State-of-the-art techniques: Boundary Scan, Q-Test, and simulation
- Designs from circuitry and instrument cards to custom ATE.
- Design for Test consultancy, installation and training
- Software tools include CAD data handling, and PAL to ICT modelling

Introduction

IFR delivers unrivalled Automatic Test Equipment (ATE) support services from the largest fixturing and programming bureau in Europe. Three sites located in Donibristle (Scotland), Stevenage (England) and Gunding (Germany) provide professional test services meeting every customer need.

The bureau has a unique close involvement with IFR's ATE development and support groups. This experience is coupled with extensive knowledge of PCB and equipment manufacture and test requirements. Teams of experienced and professional engineers hold an industry and technical knowledge that is supported by a broad range of state-of-the-art tools and techniques. These ensure innovative and cost-effective solutions to the challenging test requirements in today's market.

Supporting all IFR's ATE, a wide variety of service options are available. These

ATE Programs, Fixtures and Services



include fixture kits and parts, data preparation, test fixture/program development, consultancy and turnkey fixture, tester and test system development.

Capabilities and Services

The comprehensive range of ATE support includes:

- Fixture, program design and build
- MDA, in-circuit (ICT), functional, combinational and system test
- Fixture kits and customization
- Specialist/turnkey fixturing
- In-line or automated handling
- CAD data conversion
- Digital simulation support
- Boundary scan, Q-Test™
- PAL (JEDEC) to ICT modelling
- User instrument card design
- Instrument drivers
- Test consultancy (design for test)
- Complete test solutions, including custom ATE design
- Board test and repair, engineering outsourcing
- Installation and training

Extensive use of computer-assisted techniques ensures cost-effective hardware and software solutions.

Test Solutions

Part of the IFR Customized Applications and Systems business unit, the bureau has over 1,000 man years of experience in hardware and software. This experience delivers wide-ranging capabilities in the complex areas of electronics test.

IFR test solutions are to be found throughout the international spectrum of industry applications. Working closely with the customer ensures appropriate

definition of specific needs, and project managers oversee every stage of an order until it is complete. For larger systems, the bureau can provide solutions to every aspect of a project, including planning, hardware, software, and mechanical design and integration.

Fixtures and Programs, from MDA to System Test

A structured level of service is offered from basic fixture design, through continuity and passive testing, to full powered-up functional or system test. In-circuit solutions can be derived from manual lists or CAD/CAM. For functional or combinational test, solutions can be developed from test or design specifications, or from working with the customer.

Automated data handling, including CAD conversion and CAPG (Computer Assisted Program Generation) maximizes accuracy and test program fault coverage. These techniques also produce designs for precision-drilled fixtures with optimized lead lengths.

Test programs can link to IFR's i-Base Information Management System for data logging/analysis.

Annual agreements for test partners ensure cost-effective test solutions.

Fixtures kits and Customization

High quality fixture kits and adaptors for IFR ATE and all other popular ATE systems. Fast turnaround, low costs, and 'right first time' are ensured by the use of networked systems and semi-automated wire-wrapping machines.

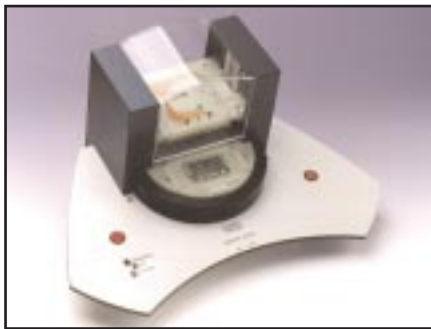
4200/System 80 fixture adaptors, for example, protect fixturing investment for System 80 users moving to 4200 series.

ATE Programs, Fixtures and Services



Customization options include silicon seals, carriage plate legends, twisted pair wiring, ground screens, removable circuitry cards, operational counters, and hold-down gates.

Specialist Fixturing



In addition to standard vacuum fixtures, the bureau offers specialist or turnkey solutions, including pneumatic fixtures. Project examples include: in-circuit or functional fixturing for use with the customer's own test equipment, and fixtures for flexible printed circuit boards, dual-height, double sided probing, and dual bay pneumatic applications.

On standard fixtures, the bureau provides hold-down gates, interfaces for in-line test facilities, and pneumatic actuators for button pressing or switch toggling. These techniques minimize manual intervention during automatic testing.

Safety critical applications include live mains testing or high power (e.g. 8000 VA), including adjustment or access with power applied.

In-Line or Automated Handling

IFR offer a full consultancy service, with test engineering on a project basis for the design and implementation of (fully) automated in-line test facilities. These

solutions typically reduce the need for operator intervention, improving product flow, feedback, and test reliability.

CAD Data Manipulation

For ICT programs, data can be supplied as CAD/CAM, or manually derived information. Translation capabilities ensure that data can be used from a wide range of Printed Circuit Board (PCB) layout and schematic capture systems. Automatically generated test programs and fixture drilling and wiring information improves accuracy, quality, and time to market.

Digital Simulation Support

Through the use of its SIMlink™ software suite, IFR is able to offer simulation post-processing facilities for loading industry standard digital simulators, including LASAR, HILO, and MENTOR, as well as older simulators such as CADAT. SIMlink's open file formats allow it to be customized to other simulators, either by the user or by IFR simulation experts.

Boundary Scan

Automatic test generation is available for interconnect testing of boundary scan devices. Test generation may be for device level testing and mixed, real, and virtual pin circuit test.

IFR 4200, 5200 and 5300 series testers fully support the IEEE 1149.1 Boundary Scan standard for overcoming access and device testability problems.

Q-Test



Open-circuits form a large category of manufacturing faults. The Q-Test technique is supported across the IFR ATE range. Developed and patented in-house, Q-Test detects open-circuits on custom or complex devices for which no access or data is available (for full test generation). Q-Test probes fitted to fixtures that incorporate a top-hat allow the technique to be fully exploited, cutting program development time and improving test coverage.

PAL (JEDEC) To ICT Modelling

For special custom devices including PALs, GAL, FPLAs, and ASICs, test modules are developed using PAL-link PLD test program generator. These modules supplement the standard library for in-circuit test.

Instrument Design

Where off-the-shelf test capability is not readily available, IFR offers an instrument design service for the 5300 series tester family.

A number of cards are available, forming the basis of cost-effective solutions. Instruments can be created using the core facilities of the GPIO and GPINST cards. Previous solutions include MIL STD 1553B bus testing, ARINC 429, dual programmable resistance, high performance switch matrices, telecom applications, I²C, and ISDN testing.

Test Consultancy

A comprehensive consultancy service is offered based on the extensive test and design experience in the bureau. Support ranges from advice on the suitability of a board for fixturing, to in-depth Design for Test analysis and reports.

Complete Test Solutions

Complete test solutions are developed with the customer to ensure the most effective solution within budget. Solutions may include design, management, labor outsourcing, test, networking and information management components.

The basis of any solution will be industry standard items. For hardware and software this may include PC cards, GPIB/ VXI instruments, and test language control software. This ensures full support over the life of the system.

Instrument Drivers

The bureau has many years experience in writing software drivers for test and measurement instrumentation. This includes third-party equipment in addition to IFR hardware. Many drivers already exist in the IFR drivers library. New drivers can be written in any major control language.

Board Test and Repair

For ATE users with a temporary overload of their test facilities, a board test and repair service is offered using the customer's own programs and fixtures. IFR is ISO 9000 accredited, and has anti-static test facilities.

Outsourcing test engineering provides access to fully supported test solutions from a wide expertise base, at the same time reducing overhead costs.

Installation and Training

The ATE training department provides an extensive range of ATE related courses. The bureau can supplement these courses, including information on test techniques. On-site installation or acceptance is an option with deliverable items.



IFR Americas, Inc., 10200 West York Street, Wichita, Kansas
67215-8999, USA. E-mail: info@ifrsys.com
Tel: +1 316 522 4981 Toll Free USA: 1 800 835 2352 Fax: +1 316 522 1360

IFR Ltd, Longacres House, Norton Green Road, Stevenage, Herts
SG1 2BA, United Kingdom. E-mail: info@ifrinternational.co.uk
Tel: +44 (0) 1438 742200 Freephone UK: 0800 282 388 Fax: +44 (0) 1438 727601

As we are always seeking to improve our products, the information in this document gives only a general indication of the product capacity, performance and suitability, none of which shall form part of any contract. We reserve the right to make design changes without notice. All trademarks are acknowledged. Parent Company IFR Systems, Inc. © IFR Ltd. 1999.

