

Military Aerospace Solutions



Original Solutions for the defense industry



Seica
Test Solutions

MAS

Military Aerospace Solutions

Seica has always dedicated particular attention to the defense sector, and has structured a dedicated division named Military Aerospace Solutions (MAS), to better meet the typical needs of this market.

Starting from its first in-circuit test systems developed for electronic board manufacturing environments in the civilian sector, over the years Seica has engineered and manufactured innovative and technologically advanced solutions to meet the specific requirements of the military and aerospace industry, where high quality standards, reliability and long-term support are critical.

Seica continues to develop new technologies, integrating them into VIP™ the test platform, providing multiple, extremely flexible solutions for functional and in-circuit tests optical inspection and laser-powered selective soldering of electronic boards.



SERVICES FOR OUR CUSTOMERS

Test Program Sets (TPS)

Seica started out as a “testing house” developing board-level functional test programs (detection of the faulty components) for analog, digital and hybrid boards. The first applications were developed on testers manufactured by Computer Automation (Marathon and Ironman), many of which were related to the major European avionics projects of that time. During the years, Seica expanded this experience, developing dozens of module-level Test Program Sets (identifying the faulty board within a module) related to other international avionics programs, on both UNIX and Windows language platform (C-ATLAS 716/89...)

Design and development

Seica has a very experienced design team, which, in addition to being responsible for Seica’s standard Hw and Sw platform, supports the design and development of dedicated modules and systems, on the basis of customer specifications.

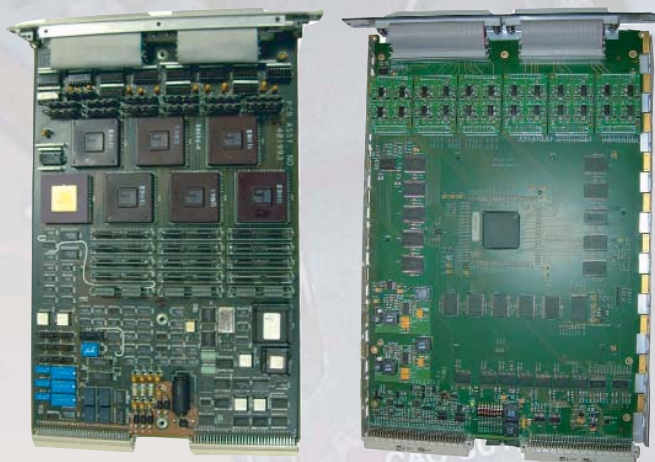
This is the case of “Special to Type Test Equipment” (STTE) or for legacy replacement modules manufactured “ad hoc” to prolong the life of an existing project, suffering from the obsolescence of some parts. Seica has more than two decades of experience in compiling, editing and checking technical documentation of different types, such as ETS, TRD, TAR and TRA.





Long-term project support

Seica offers various support services to the customers who have the necessity to extend the life of their projects: from managing the obsolescence of electronic components, production line dismantling, the recovery of lost know-how by means of reverse engineering operations, to the rebuilding of missing documentation all the way up to the capability to reproduce old electronic boards starting from the few elements available such as I/O data and a working board. This service is offered by Seica to its customers thanks to the performances provided by the Seica Pilot line of flying probe testers, the original and only flying probe platform truly oriented not only to production test but also to the repair and reverse engineering of electronic boards.



ENGINEERING AND PRODUCT LIFE EXTENSION SERVICES

The electronic equipment used for projects in the area of defense, transportation, energy and telecommunications often have a life cycle which greatly exceeds the availability of the maintenance services provided by the original manufacturer. Once the replacement stocks have been exhausted, the repair of faulty modules is the only alternative. What to do when the components are no longer available, information and schematics are missing, the test bench is no longer operating and the repair appears to be complex? Thanks to its experience in the fields of design, test and repair, Seica is able to provide a set of services aimed at prolonging the life cycle of electronic equipment:

- test, fault diagnosis and repair of modules and analog, digital, hybrid and power boards, even in the case of a complete lack of information on the product and/or test procedures;
- Recovery, legacy replacement and updating of existing test procedures on manual test benches or obsolete ATEs;
- Complete maintenance and repair services of test equipment and/or the customer's test procedures;
- Reverse Engineering of the product to be repaired, needed when the components are no longer available or traceable, or when new units must be manufactured and information and schematics are unavailable;
- Redesign and manufacture of hardware and software systems;
- Data recovery from obsolete peripherals, the conversion of programs on Microsoft Windows environment;
- Supply of new spare parts stocks.





Among all the activities mentioned, the one requiring the highest effort is, without a doubt, the recovery or rebuilding of missing information. Fully aware of the difficulties posed by the Reverse Engineering of electronic boards, Seica has dedicated significant resources to find solutions to the problems, and today is capable of providing well-tested, fast and technically reliable solutions, successfully applied by an increasing number of customers, particularly in the defense sector.

Even where there is a complete lack of documentation and schematics, and the only information available is a single sample of the board to be re-engineered, Seica is able to provide the services necessary to quickly recreate an electrical schematic and a component list useful for the automatic creation of a test program. On the basis of this data, Seica can provide a complete range of services, ranging from the manufacturing of a true replicate of the board, re-engineering using FPGA technologies, to the manufacturing of a completely new board, micro-programmed to emulate all of the functions of the original product.



Legacy Replacement

Seica has an unparalleled experience in providing legacy replacement solutions, ensuring its customers extremely flexible solutions to guarantee long-term logistics support at competitive costs. The hardware and software of Seica's VIP™ platform combines the capability to support older technologies with high performance, state-of-the-art tools, which are then also available for the development of new test programs, in addition to the legacy replacement of existing applications. The numerous software translation tools developed by SEICA perform a streamlined and, at the same time, accurate migration, maintaining the highest integrity and, most importantly, the fault coverage of the original test program, and offer the possibility of recovering existing test fixtures and software interfaces. Thanks to these powerful tools, the user facing the issue of tester obsolescence can easily transfer his existing applications and related test fixtures to the Seica platform, and continue to use these as he was accustomed to on the original tester, with the advantage of a test platform able to address his present and future developments.



Legacy replacement solutions currently available:

Computer Automation (Marathon)

Schlumberger S720 (Mediator)

GR 179X

GR 2235

GR 227x/228x

GR 275x

Tecnost RTS9032

Teradyne L2xx/L3xx

(including LASAR post processing)

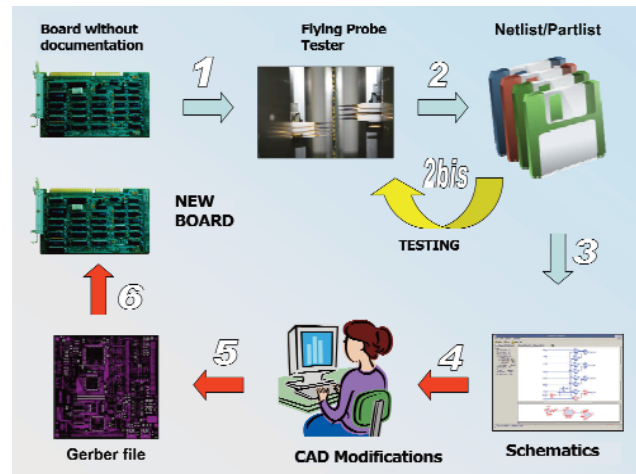
Project Experience

- Dozens of LRU/SRU TPS's for major international defense programs on multiple ATEs and Test Environments (ATLAS, C++, LASAR, LabView, tester-specific)
- In 2002 the standard Seica hardware/software platform was chosen for board level testing in the European Fighter Aircraft (EFA) program.
- Design, engineering and realization of several Special to Type Test Equipment (STTE).
- Numerous legacy redesigns for prolonging project life, including the control unit for a mobile power generator for weapons systems, a control unit for the DSP filtering of launch data for missile launchers, complete Electrical Test Set for field maintenance of missile launchers.
- Digital channel boards for military aircraft LRU test benches.



Reverse Engineering

Seica is uniquely positioned to offer comprehensive reverse engineering solutions, thanks to our PILOT line of flying probe systems. These systems can provide a complete set of software tools developed specifically for this process, and the hardware resources (mobile electrical probes, cameras, etc.) needed to acquire and verify the board data. The results of the process enable the complete and accurate rebuild of the netlist of the board. The components can then be identified and associated to the database to create a complete electrical dossier which can be directly issued or exported through the standard EDIF. If the board contains CPLD, FPGA or ASIC components whose data are not available, the Seica solution includes a set of proprietary procedures called “electronic circuit opener” (ECO) which enable, with the support of HDL templates, the simulation and physical verification, and the extraction and validation of this information in order to create a complete and reliable database in order to start re-engineering.



The collected data can be used to define strategy to prolong the product life cycle. In the simplest cases, this could be the exact replication of the PCB and rebuild of the board using the original components.

Other situations may require a different strategy, such as designing a new layout and possible FPGA components, and in complex cases, the strategy could be the design of a substitute “black box”, “plug-in” compatible solution. This last solution, based on the development of firmware technologies, allows the replication of the func-

tions of the original product, the recovery or even the improvement of its performances and maintainability, and its extension for use in new applications.

Once the replacement product has been completed, the services provided by Seica include a thorough validation phase, utilizing the diagnostic and test programs of the original board and the integration of the manufactured board into the final equipment, for verification with the application programs considered as comprehensive by the customer.

PRODUCTS

Seica is able to offer a full range of flexible, cutting edge solutions thanks to continuous investment in research of new technologies, and the development of new products.



Functional test

The Valid VIP (VIVA Integrated Platform) Series is the ultimate integrated functional test solution, capable of providing high-performance analog, digital and mixed-signal testing for second level test. This series includes comprehensive fault diagnostics, with powerful guided probe algorithms, driven by simulated or learned data. Valid systems are the best solution to meet the challenge of complex functional compliance and validation testing.



Intelligent break out box

The PTE-100 is a powerful, flexible, portable, general purpose Intelligent Break Out Box, designed to provide on-board checkout, test and troubleshooting on the critical parts of electronic systems. A first level tester for in-field diagnostics, it is suitable for helicopters, airplanes, trains, submarines, tanks and boats.



In-circuit test

The Compact line has all the power and the flexibility required to provide a complete test solution, from the most advanced techniques for structural and power-on in-circuit tests, to high frequency functional digital tests. It is designed to include a variety of physical system configurations, so each user can choose the one best suited to the application: in-circuit test bench, functional test bench or automated test handler through a bed-of-nail fixture.



Mini 200

Whether used as a Desktop system or a inserted in a rack, the Mini 200 is configurable for in-circuit and functional test, with integrated boundary scan. It can operate as a master or a slave; in the second case it becomes a multifunctional instrument.



Flying Probe & Boundary Scan Test

The Pilot Series is the most versatile and complete line of automatic flying probe test systems on the market today, offering the widest range of solutions and performances for testing electronic boards. Models range from 2 to 8 test probes, accessing simultaneously one or both sides of the board, which can be positioned either horizontally or vertically. Seica has also developed Flyscan, the true integration between ATE Flying Probe and Boundary scan, available on the complete line of Pilot Flying Probe test systems.



Laser selective soldering

The Firefly is a laser-based, selective soldering solution that has been developed to satisfy the ever growing need of modern electronics manufacturing for maximum flexibility, and to address the particular problems related to the introduction of the new lead-free alloys, quality control and manufacturing traceability.



PCB test

The Bare Board Tester (BBT) Line offers a complete test solution for flying probe test of printed circuit boards, and includes a fully integrated automation option.



Automated System for Optical Inspection

With the ever growing request to maintain high quality at low costs, the OMRON line of AOI systems provides a solution which fully responds to the requirement. The models VT-WIN, VT-RNS and VT-RNS-PT provide in-line and stand-alone solutions, all with the "Colour Highlight Technology" patented by Omron.



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