

**IPSES S.r.l.**

Scientific  
Electronics



With its offices and laboratories located in the industrial district of Milan, **IPSES** is specialized in design hardware, firmware and software solutions for customized electronics and scientific instrumentations.

In particular, IPSES develops applications in the field of **testing and measure, industrial control, automotive, embedded systems, reengineering and migration of technology.**

**IPSES** has also developed and installed numerous scientific laboratories in Italy and abroad, among the others in: University of Milan (Material Science Department), University of Turin (Physics Department), National Institute for the Physics of Matter (INFN), University of Lecce, University of Bari, Pastis CNR (National Research Centre) of Brindisi, Arcadia Technologies for Cultural Heritage of Milan, Curatorial and Conservation Department - Xian Museum (China), the Tubitak Marmara Research Institute (CNRS), Gebze (Turkey), Archaeological department National Museum and Library, Yangon (Myanmar).

Established in 2003 incorporating the *AEDI scientific instruments*, active since 1988, **IPSES** is based in Milan and has its laboratories in Cesate (MI), and has always focused on the **high competence and expertise** of its team of research and development.

The innovative approach of **IPSES** is to design advanced systems in close contact with client, determining needs and requirements for truly effective and targeted solutions, ensuring high quality, design flexibility, customizable cost and development time.

**High qualitative level**

**Focus on clients' core business**

**No compromise**

**Flexible project solutions**

**Competitive and flexible costs**



CONCEIVING  
PLANNING  
DEVELOPMENT  
IN SCIENTIFIC  
ELECTRONICS

[www.ipses.com](http://www.ipses.com)

# flexible solutions for electronics and testing

## OUR SERVICES AND SOLUTIONS

- WIRELESS AND MEASURE SYSTEMS
- APPLICATION AND SYSTEM FOR TESTING
- SOFTWARE FOR EMBEDDED SYSTEMS
- FIRMWARE DEVELOPMENT
- MICROCONTROLLER PROGRAMMING AND FPGA
- PCB DESIGN
- MIGRATION AND REENGINEERING SERVICES



Our developers are certified:



## HARDWARE AND EMBEDDED DEVELOPMENT

IPSES's embedded electronic skills address a broad range of applications, ranging from analogical, digital and mixed signal designs, from scientific electronics to industrial applications, wireless systems, measurement and test systems, handling printed circuit board designs, reengineering & migration services.

We have a wide experience with USB, Ethernet and WiFi, CAN, RS232 and RS485, I2C, SPI, RFID.

We develop firmware for 8, 16 and 32 bit microcontrollers both in C and Assembler.

We develop VHDL firmware for FPGA, CPLD and other PLD. We design and build the mechanics. We handle the execution of all the electromagnetic compatibility tests required for CE certification.

Besides:

- Solving and realizing PCB.
- Processing of technical documentation
- Development of managing drivers and user interface on PC
- Purchasing and installation of all the necessary equipment.
- Testing of the whole system.
- Conceiving and making mechanical devices.
- We can provide to the execution of the necessary electromagnetic compatibility tests for the CE certification.

## FIRMWARE AND SOFTWARE

- Real Time Embedded Software for a wide range of 8, 16, and 32 bit processors.
- Embedded C, Assembler and VHDL Programming
- Embedded firmware (Microcontroller, FPGA, CPLD,)
- Control System Software
- Embedded LabVIEW FPGA and Real Time development
- NI LabWindows/CVI development
- NI TestStand development
- System device drivers development
- Driver development and relevant WHQL certification. WHQL certification for FTDI driver
- GUI-based support software to allow in circuit reprogramming, data acquisition, and monitoring of the embedded application.
- Windows 7, Vista™ and XP™ Embedded development



### Programming languages

- ANSI C e C++
- Assembler
- VHDL
- Verilog
- NI LabVIEW
- NI LabWindows/CVI
- NI TestStand
- Basic and Visual Basic
- Matlab
- HTML, PHP, CGI, Java

### Protocols and Standard

- USB
- Ethernet
- WiFi
- CAN
- RS232 e RS485
- I2C
- SPI
- RFID
- JTAG

### Microcontroller, CPU and FPGA

- PIC Microchip
- 68HC Motorola (Freescale)
- Fujitsu FMC16LX
- Mitsubishi M16C
- Infineon C167
- MSP430 Texas Instruments
- NXP 80C51 (ex Philips)
- Ubicom IP2022
- Intel 8051CPU
- Intel XScale
- TMS320 Texas Instruments DSP
- Xilinx Spartan e Virtex

**NATIONAL INSTRUMENTS HARDWARE INTEGRATION**

With its excellent knowledge of all **National Instruments platforms** and its wide experience in using and integrating **NI hardware (CompactRIO, PXI, CAN, DAQ, etc.)** and software (**LabWindows/CVI, LabView** and **TestStand**), **IPSES** offers its clients customized solutions and services, providing both technological and economic benefits.

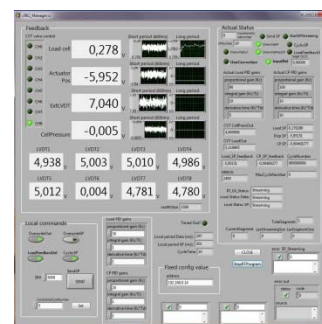
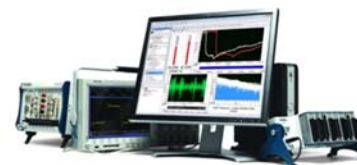
Since several years, **IPSES** conceives, projects and develops test and measurement systems based on **PC, CompactRIO** and **PXI**, especially oriented toward industrial and scientific applications. That makes **IPSES** the best partner choice for enterprises and research bodies which need to reduce times, costs and risks in developing and making their advanced technology solutions.

According to the complexity of our client's solution and project documentation such as project architecture, product engineering and business processes, **IPSES** can:

- Overhaul its client's solution, especially concerning its reliability, feasibility and testability
- Advice and suggest how to optimize the architecture and design project
- Project, design and define the whole system architecture
- Develop, optimize and debug the required applications
- Evaluate, plan and organize the required activities
- Integrate the hardware and the software, including third party products
- Make the prototype
- Develop testing criteria and carry out acceptance tests
- Manage certification processes, such as the immunity to electromagnetic disturbances, for customized solutions

**IPSES** is a **National Instruments Alliance partner** company.

Besides, our technicians are certified as NI LabVIEW, LabWindows/CVI and TestStand developers



**SERVICES AND PRODUCTS FOR TESTING**

IPSES has a wide experience especially designing and developing test system devices, above all for functionality and automotive tests. We developed and installed many test systems in Italy and abroad, dealing with customization of software at the clients' firm and fixing and upgrading the hardware. With its strong background in firmware, software and hardware development, **IPSES** can furnish extremely reliable and flexible solutions, developing whole test sequences and designing hardware and firmware.

We offer:

- Integration of National Instruments hardware
- Development of customized user software interface
- Processing of technical documentation
- Development of test sequences using NI TestStand.
- Testing of the whole system.
- Installation and integration in client's production lines of test devices
- Service assistance on site

Besides, thanks to our **partnership with 6tl engineering**, we can provide turnkey test systems quickly: complete systems bench, stand alone, rack-based or constituted by in-line benches for small-medium-sized, and large volume. Thanks to an innovative design flexible, modular and reusable systems 6TL can be composed and extended in a personalized way, allowing easy reconfiguration for new applications.

IPSES not only guarantees a commercial benchmark, but also an effective technological support for all phases of development of the system, its design, testing and integration in the production line, the development of test sequences, upgrade and optimization in case of new products or migration to new technologies. A highly qualified support near that will follow you throughout the period of operation.

For further information, visit our website [www.6tl.ipses.com](http://www.6tl.ipses.com)



Rappresentate ufficiale vendita e supporto tecnico Italia e Svizzera



## FIXTURE

IPSES designs and manufactures customized **fixtures** for testing either manual, semiautomatic, and fully automated, with single or double contacting even on already existing machines.

The fixture, tailored to the testability of the electronic board and needs of the customer, allow you to contact the DUT (Device Under Test) from below and from above, in order to solve problems of direct contacting of connectors and check the orientation of assembled components.

In addition to functional fixture and ICT for electronic cards, we also design and manufacture fixtures to contact finished or semi-finished products, which can both receive and clamp the DUT, either automatically or manually to contact available connectors.

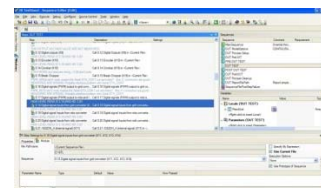
Finally, we can integrate in the fixtures also detection devices for chromatic and brightness by optical fibers designed to test LED, display, and other light sources.



## TEST SEQUENCES

IPSES has many years of experience in the development of many **test sequences** and in the use of **TestStand**, also confirmed by the National Instruments certifications of its engineers,

IPSES offers consulting services for the development of the criteria and acceptance tests. It Perfectly controls the entire testing process, integrating the code of other programming languages (such as LabVIEW, LabWindows / CVI, etc..) to perform individual tests, test flow management, reporting, data logging into the database by different users with their privileges, multitreading and multiple test UUT (Unit Under Test).



IPSES also develops customized operator interfaces either step-types, either process model with which it builds applications that meet your specific requirements.

## SERVICES FOR TESTING

Depending on the complexity of the solution and the documentation relating to architecture, product engineering and business processes, IPSES is able to deal and manage, in particular:

### Evaluation of product testability

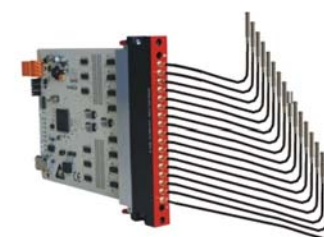
Thanks to its ability to design hardware and firmware, IPSES offers consulting services for assessing the testability of the product in the design phase, both at physical and logical level, suggesting improvements that optimize testability, or, in the case of products already developed, modifying the existing project to make it more functional and developing recommendations on improvements to architecture and design.



### Interventions on existing machines

The wide range of IPSES specialization allows to offer services and solutions applicable to existing and defined machinery, even when provided by a third party. In particular:

- Following and maintaining test sequences already developed and to assure optimization and migration to other technology
- Developing new test sequences for new products using existing beds and instrumentation
- Modifying and upgrading the hardware so to answer new testing requirements, and to improve existing ones (reduction of testing time, reducing operator intervention etc.)
- Integrating 6TL and National Instruments boards and components, such as board of switches, front end and chromatic analysis on other machines.
- Integration of hardware and software, including third parties.



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