



TESTING HOUSE

"Passion for being, serving and transcending"



POWERFUL COMBINATION

STRATEGIC RELATIONSHIPS



RECONOCIMIENTOS



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www.testinghouse.com.mx



SUMMARY

The universality, reliability, easy of integration and programming algorithms as fast as memory technology limits combined with unique software and hardware features to ensure a low cost model change, data security, tracking and confidence required on the manufacturing ISP process is now available on the EZ4000 ISP & Testing Station. Also available are the Electrical Parameter Testing modules. The EZ4000 station represents a faster learning curve, paperless technical manuals and training for sustaining and new model integration, besides to a 3 year warranty on hardware and life time warranty on the application

SOFTWARE FEATURES

- ◆ **3000+** different devices (Check device list at www.smh-tech.com)
- ◆ **Parallel programming:** Capability of programming up 4 or 8 devices at the same time, and up to 32 images in the same fixture (subject to UUT size)
- ◆ Holding of **multiple codes** to be programmed
- ◆ Friendly user interface with **no advanced programming skills** required for sequencing modifications
- ◆ Multiple programming protocols supported
- ◆ **Dynamic data programming** “Serial numbers, production site, MAC, etc.”
- ◆ Software with Log file generation, **statistical module** and cycle counter with automated messages for **maintenance plan** purposes
- ◆ Administrator, technician and operator **users could be configured** to grant different access permissions
- ◆ **Qualified Support** Team through TH MX as official and **certified** SMH and NI distributor
- ◆ A wealth of technical and operational information in the “*on line help menu*”
- ◆ **Engineering training** for future products implementations
- ◆ **World Wide** On site installation available
- ◆ **Three year warranty** on hardware products, lifetime on application
- ◆ **Software updates** as part of the yearly support contract





HARDWARE FEATURES

- ◆ Ergonomic manual actuation (No vacuum or pneumatics required)
- ◆ Fixtures usable area: 450 x 320 mm
- ◆ High quality **robust and reliable** solution for manufacturing environment
- ◆ **Easy and cost effective** model changes (average 10% to 15% from original station cost) with minimal inter-changeable parts (Bed of nails and pushers)
- ◆ Reliable Windows OS workstation
- ◆ **No vacuum or pneumatics** required to operate the fixture.
- ◆ **OPTIONAL: Electrical parameter testing** for shorts test, discharge capacitors among other measurements
- ◆ RF Testing capabilities using INGUN RF cassettes & NI instrumentation

POWERFUL COMBINATION

Reliable & Flexible Solution = *Powerful Application* + *Flash-Runner* + *Modular fixture*

Figure 3. EZ4000 Main technology components



Increasing ROI & manufacturing process productivity

Case Study: Testing House Mexico Ez4000



Product and Process innovation are strategic to increase productivity

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Testing House de Mexico has formally presented its new product EZ4000 at Productronica 2011 where the Flash Runner Quattro together with National Instruments, INGUN & FEASA technologies are all interacting and managed by a Test Software application developed by THMX certified LabView developers.



Introduction

Now days product & process innovations are fundamental towards achieving higher productivity and increasing the value delivered by existing testing and ISP technologies. The current way of executing ISP is usually focused on doing everything at the ICT tester; this means using an asset that can cost from \$150K USD to \$500K USD instead of a more competitive combined technology solution, like the Ez4000 which can cost from \$39K to \$79K USD (functional test features are available at an additional cost) depending on the system configuration.

This case study will show how combining In Circuit Test (ICT) Agilent 3070+ EZ4000 can help customers increase their ROI and ultimately productivity for at least 40% and count with the flexibility of having many different customer products programmed and tested on the same station.

The Problem

- *Customer Management & Engineering teams challenge* was interesting: *Produce in 3.5 to 4 days what they usually do in 7 days* while at the same time reduce the cost for at least \$10K USD on each ICT solution by no longer including the programmers and integration fees on ICT fixture bases.
- *Customer* had also an interesting *dilemma*: purchase another ICT Agilent 3070 tester (aprox: \$150K USD) and continue using/purchasing programmers on ICT fixture bases (average: 10K USD per fixture), or invest in two EZ4000s stations (aprox: \$70K USD each) and five custom cassettes & applications for five different assemblies (average \$9K USD per customized kit).
- Customer already had many NI PXI systems at their functional testers, but also had many FlashRunner Quattro programmers in their existing ICT fixtures. It would be of great value if the proposed solution shares the same technology for ISP purposes so as to eventually use existing programmers for spare & sustaining engineering purposes and in turn reduce the usual yearly asset investments on such technology (saving on average \$30K USD per year).
- Customer needed to program different MCUs parts from different silicon producers, so the ISP solution must be highly flexible to simply add licenses into existing programmers: Universality was a must have feature and of course at a reasonable cost vs. existing competitor solutions.

The preliminary data showed that the customer would increase his productivity by about 40% while investing about the same amount in two EZ4000s vs. one additional ICT tester. In any technology to be chosen by the customer he will be able to divide the cost of his investment between different products and not only in one (Programmers on ICT fixture bases), but of course is different to dividing \$150K (One ICT) / 5 applications vs. \$75K (One EZ4000) / 5 applications, right?



Existing Solutions

The customer had used FlashRunners (FR01ENG or FR04s) from SMH Technologies on ICT fixture bases while at the same time had offline programmers available. The use of FlashRunner Quattro is good for parallel programming at ICT, however the space and system resources available at the ICT fixture are very limited. From one side the ICT single bank fixture will only accept 2 customer PWAs instead of 4 or 32 (subject to board dimensions) that could be allocated at the EZ4000 station, on the other hand having the customer adding pin cards to an additional ICT tester bank (each ICT Agilent system has two banks) was too costly simply to increase the amount of PWAs that could be In System Programmed at the ICT system.



In regards to the offline programmers, customers usually pay for each MCU programmed while at the same time lacking the possibility of reprogramming PWAs returning from testing stations or from the field for RMA purposes; as such offline programmers are not green solutions, this is because very frequently customer products get damaged during the MCU replacement process and consequently are scrapped (environmental consideration). It is mandatory that technologies also contribute to the companies' sustainable growth, and that of social, economic and also ecological perspectives.



Proposed Solution

The customer agreed to evaluate the EZ4000 station at their facility for one of its most important projects. Below is a table showing a summary of the results:

Item	Key Indicators	Before (ICT with IS integrated)	After (Using ICT +EZ4000)	Advantages & Comments
1	Return on Investment	Purchasing one ICT tester (\$150K USD)	Purchasing one EZ4000 system (\$75K USD)	50% less cost = twice the ROI. Using a combined asset value of \$225K USD (ICT \$150K + EZ4000 \$75K) instead of a \$300K USD (Two ICT testers)
2	Productivity	2 PWAs (fixture space & ICT system resources limitation)	4 PWAs	50% increase in productivity. Produce in 3.5 days vs 7 days, ACHIEVED!
3	Test program and Fixture Cost	~ 25K USD per ICT fixture	ICT: \$15K USD + EZ4000 Customized App & cassette: 10K USD	10K USD cost reduction at ICT fixtures since customer does not need to continue purchasing FRQuattro on ICT fixture bases. Overall cost is the same \$25K but increasing productivity 50% as stated on item 2.
4	FRQuattro Programmers Cost	~ 7K (fixture bases)	\$0.0 (Included on asset value)	Reduce to \$0.0 USD since customer invests once in programmers with the EZ4000
5	PWA Model change	~ 25K per new assembly (Test Program + Fixture + FRQuattro)	10K USD	60% less cost in case a new customized EZ4000 cassette&application is required for a new customer product
6	Duplicate ICT Fixture requirements	~ 25K (Test Program + Fixture + FRQuattro)	\$0.00 USD	100% reduction because EZ4000 can program at least 4 PWAs at the same time vs 2 at ICT
7	Floor space	Same	1.5 m2 more	30% to 40% the throughput increased!
8	Flexibility	Focus on using production time of a \$150K tester on what it is designed for: ICT test	Use \$75K USD tester to focus on ISP and Functional test based on PXI	PXI flexibility that could accept without issues LED Analyzer (FEASA) and more than 10000 + different PXI instruments!

Customer Testimonial

"We have been using one of these stations since the beginning of the year; it was a DEMO unit that Testing House Mexico provided us to evaluate in one of our most important projects. Before using it, the microcontrollers were programmed in the same fixtures we use to test the boards. Using EZ4000 increased our testing/ programming capacity 30-40%, which provided us the elements to justify the purchase of 2 brand new EZ4000's, to expand the savings using them on more of our board assemblies"

For more testimonials see the Testing House Mexico Linkedin profile www.linkedin.com

As stated by the customer, they purchased two EZ4000 systems and now they are using the ICT Agilent 3070 technology in combination with the EZ4000 but in more than 5 different assemblies, therefore increasing their overall productivity. By changing a process they are now able to make better use of their available assets &

financial resources while at the same time reducing the ecological impacts of their manufacturing process.

To request a technical feasibility analysis of your process and to understand if the EZ4000 can add value to your company please contact Testing House de México & SMH Technologies.

About Testing House

Testing House is a global company whose mission is to produce in a creative way satisfied customer by designing, integrating and marketing technology solutions and services for the High Tech Industry, through a world class system, formed with highly competitive persons and innovative processes, all managed with a totally human approach.

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