

Case Study: Testing House de Mexico EZ4000 station using Flash Runner Quattro SMH technology.

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INTRODUCTION

In System programming is now days a general requirement on the electronic industry, off line programming is not the standard process anymore. Among many expectations, the below items are fundamental requirements on the manufacturing process:

- Execute the ISP process in more than one device at the same time and reduce the cycle time towards **increasing productivity**.
- Efficiently use the time and money invested of existing ICT systems by focusing on core system competencies and separating process to increase throughput at least twice.
- Reliable and fast communicate through LAN between instruments and programmers.
- Possibility to connect and program multiple MCU devices on the same station and program up to 8 devices at the same time.
- Programming time as fast as allowed by the target device's technology.
- Programming algorithms as fast as memory technology limits
- Significantly reduce fixture customization and model or new MCU part numbers change cost.
- Reduce the investment required to perform the ISP process by using an asset that can cost as much as 10 times less vs. existing ISP solutions either off line or at the ICT tester.
- Invest once in programmers and instrumentations but most of all expand the programming capacity of the station by adding licenses for MCU new part numbers instead of installing programmers every time an ICT fixture is required.
- Validate some fundamental features on the PWA like power discharge, shorts test between critical power and ISP nodes together with voltage measurements prior or after the ISP process.

The above items are not simply achieved with programming modules. There is a need for a integral system; but, a system from which the software complies with high quality standards, that also allows the freedom to the final user to

Reduce the cycle time towards Increasing Productivity

Testing House de México has released its new product called EZ4000, where the Flash Runner Quattro together with National Instruments and INGUN technologies are all interacting and managed by a Test Software application developed by TH MX certified LabView developers.

design its own fixtures (CAMCAD required), include by adding an algorithm license the capacity to program new MCU part numbers plus hardware and instrumentation with a well establish world wide support network.

Based on the mentioned customer needs is how Testing House de México has released its new product (Patent in process) called EZ4000, where the Flash Runner Quattro together with National Instruments and INGUN technologies are all interacting and managed by a Test Software application developed by TH MX certified LabView developers.

THE PROBLEM

The objectives were to:

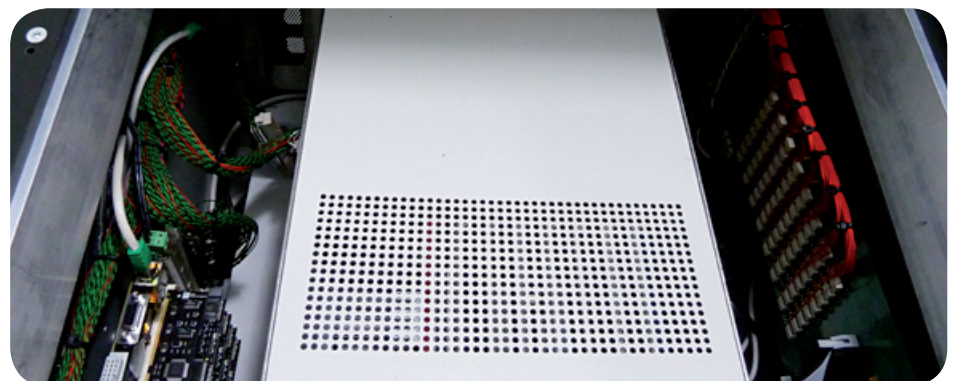
1. Increase throughput / productivity by programming four devices (PWA) (ATMEL ATMEGA2561V) in 40 seconds on an exter-

nal bench vs. 2 devices (PWA) in 40 seconds programmed at the Agilent ICT 3070 on a 2UP fixture.

2. Use an alternate ISP station, with a value of at least 50% lower vs the existing ICT tester cost.
3. Encourage the customer to invest one time on the ISP system instead of purchasing programmers and paying integration fees on ICT fixture bases.
4. Reuse existing Flash Runner Quattro technology installed on the customer ICT fixtures as to reduce the initial investment cost and reduce the Return Over Investment time.

Required features for the solution were:

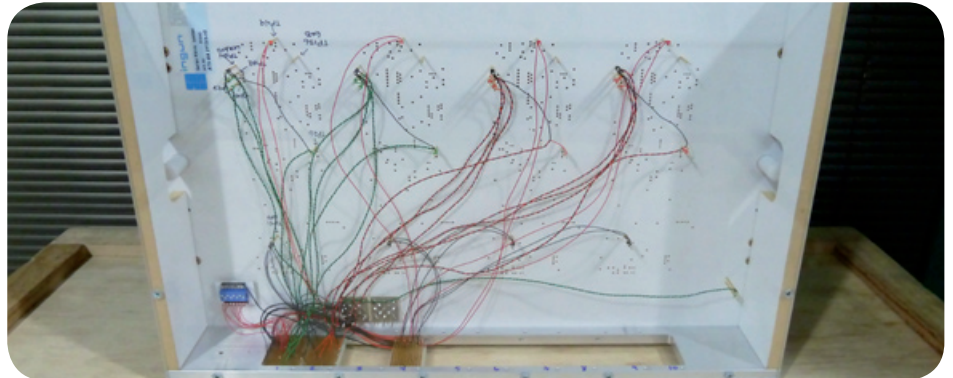
- Friendly user interface.
- Universal station that can support all existing MCU part numbers currently in use by the customer.
- 4 devices to be programmed at the same time and with the capacity to expand to up to 16 devices where 8 could be programmed at the same time.



- Dynamic data programming (i.e. serial numbers and serializing routines for panels with a single serial number).
- Easy of integration and programming algorithms as fast as memory technology permits
- Administrator, technician and operator users
- Unique software and hardware features to ensure a low cost model change (from 10 to 15% of initial ISP station investment)
- Data security and LOG file generation for tracking purposes.
- Paperless technical manuals and training for sustaining and new model integration
- Qualified Support Team through TH MX as official and certified SMH and NI distributor
- 3 year warranty on hardware and life time warranty on the application
- Software updates as part of the yearly support contract.
- Ergonomic manual actuation (No vacuum or pneumatics required)
- Reliable Windows OS Workstation
- Electrical parameter testing for shorts test, discharge capacitors and VDC measurements
- Easy way of equipment installing on manufacturing for quick re-layout if necessary (no vacuum or shop air required, standard 120VAC mono phase power supply)

THE SOLUTION

Customer ICT solution was using a single bank Agilent 3070 ICT fixture, two FR01ENG SMH programmers and programming 2 microcontrollers at the same time in 40 seconds. This configuration was implemented due to ICT tester limited resources (only one bank with ICT resources) and ICT fixture space con-



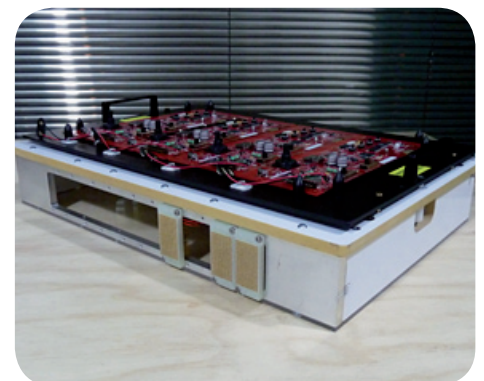
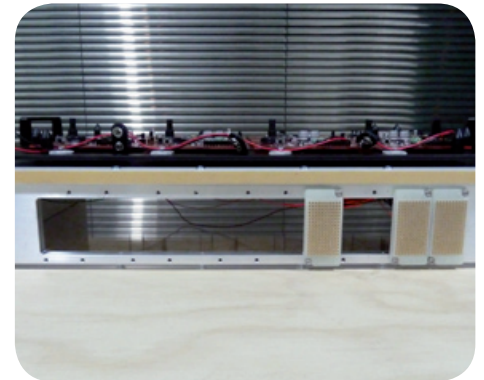
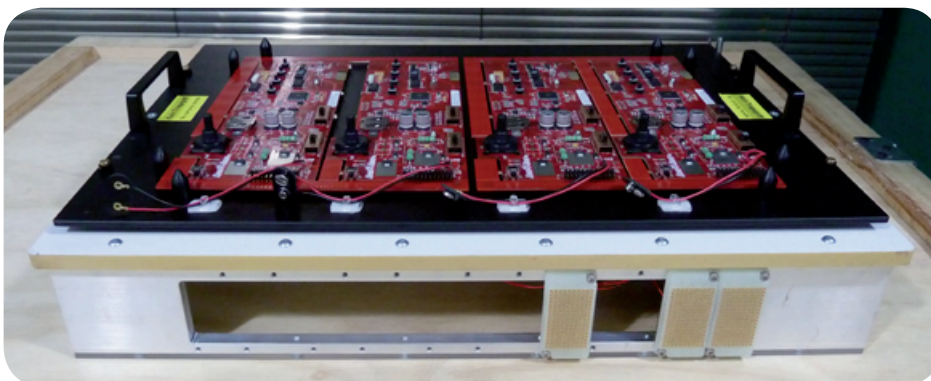
straints (single bank fixture). The MCU programming process with the EZ4000 station is currently taking the same 40 seconds but programming 4 MCU s' / PWA s'. The EZ4000 is also including the optional features of Electrical parameter testing for shorts (7 seconds for the four PAW s'), discharge power (before and after power up) and VDC measurements.

For the EZ4000 station Testing House selected FR04A08 because:

- Galvanic isolation and possible to expand to 16 devices since two FR04A08 programmers are included on the EZ4000 station.
- Programming time with FlashRunner for target microcontrollers is about 40secs and 4 microcontrollers could be programmed at the same time with the FR04 technology.
- Previous used SMH solutions proven to be reliable at manufacturing environment.
- Lower combined (NI, INGUN, TH, SMH)

cost vs. existing programmers and ISP stations with limited expansion features or too expensive to expand.

With the EZ4000 station the throughput is now twice the one achieved on the ICT tester and with 50% of the asset investment as expected by the final customer. SW routines resulted easy to understand for Test Engineers with ICT or functional test background.



ABOUT TESTING HOUSE



Testing House (www.testinghouse.com.mx and www.testinghouse.com) is a global company whose mission is to produce in a creative way satisfied customers 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. Testing House is committed to continuously and systematically challenge our company IQ and, by being one of the

best places to work, ensure that every person is completely responsible for exceeding the level of service and value expected by our stakeholders'. With a strong commitment in the investment on R + D + i which will make the difference in our products and services, reducing also the ecological impact of the High Tech Industry processes, and, at the same time, stimulating our people to make of this innovation process the cornerstone for a higher quality of life