

Industrial Controls

Opportunity This customer needed to streamline and automate functional regression testing for their product. 125 Tests required 80 hours to manually setup and execute the test suite.

Business Need This Company makes power generators. They produce a core product and modify that product to meet their customer needs. They wanted to insure the modifications made to the core product did not affect existing functions.

Engagement 2 Fastek engineers: 1-LabVIEW architect, 1-LV programmer for 6 weeks of work.

Fastek Services Fastek automated the 125 tests using LabVIEW, TestStand, and a complement of NI PXI Equipment. The automated test suite can be executed in 10 hours.

The Fastek implementation also simulated two 3-Phase High Voltage AC sources, eliminating the non-recurring equipment costs previously required to test the SW.

This significantly reduced the risk to the personnel performing the test and for the “device under test”.

- Return on Investment**
- Product lifecycle time was shorten
 - o Regression testing was reduced from 80 to 10 hours
 - Lower Project Costs
 - o The need for expensive laboratory equipment for real-time testing was eliminated.
 - Reusable
 - o A low-voltage 3-Phase simulator has been derived from this implementation, enabling more rapid design cycles.
 - First time success and on-time delivery.



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**Field Case
Studies**

Automotive/Transportation

Opportunity

Transmissions are used in all manner of transportation applications, including civilian/automotive, industrial/trucks, and military/trucks and tanks.

Instead of using analog electrical signals, to drive solenoids to control the transmission and to read sensors to monitor temperature, speed, and torque, many manufacturers have use a single CAN interface to perform all of those functions.

Business Need

A manufacturer of transmission test fixtures needed to seamlessly integrate CAN instrumentation and control into their existing product line.

This customer struggled to find a contractor to:

- Create a CAN application capable of controlling and instrumenting the new transmissions.
- Provide an interface and execution protocol, such the CAN application could be integrated into legacy LabVIEW code.
- Operate without interference to the operation of the existing dyno-controls; test scripts; and documentation generation.

Engagement

2 Fastek engineers: 1-LabVIEW architect, 1-LV programmer for 8 weeks of work.

Fastek Services

Fastek implemented the CAN database and wrote the LabVIEW code to implement communications protocol for an entire line of new transmissions.

Return on Investment

- Product lifecycle time was shorten
 - The customer was able to create a new and timely product by augmenting their existing product with one NI PCI CAN card and the Fastek CAN application SW into their existing architecture.
- Lower Project Costs
 - The customer's existing product maintained it's legacy functions; the CAN capability was delivered by means of one additional PC-card and augmentations to the existing SW.



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**Field Case
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Automated Life Testing

(What customer and Project)

Opportunity

A manufacturer of electrical and electronic switches required instrumentation to support accelerated life testing (ALT) of their product.

Business Need

To insure the delivery of a quality product, this customer requires random samples of unit builds to undergo stringent mechanical testing to extrapolate the quality of performance over the life of those units in the field.

A pneumatically controlled test fixture mechanically exercises a bank of switches under test, and measures the electrical performance of the electrical switches and monitors the CAN-messages of the electronic switches.

These units will be used to support statistical product testing at the manufacturing plant; and validation testing at the product development center.

Switch contact patterns are retrieved from a product database and are used to dynamically generate test criteria for entire product line of two and three position switches.

Engagement

2 Fastek engineers: 1-LabVIEW architect, 1-LV developer for 6 weeks of work.

Fastek Services

Fastek engineered and coded a LabVIEW solution capable of life testing a product family of electrical-contact switches and electronic, CAN-based, switches.

Using SCXI analog inputs or a USB CAN, the test statistics are measured and evaluated for each switch under test. The Fastek solution can test 1 to 12 switches, simultaneously in one fixture; and is re-scalable to support multiple fixtures simultaneously.

Return on Investment

- Lower project costs
 - o Fastek proposed an architecture that allowed this customer to reuse most all of their available SCXI equipment. CAN communications were implemented using a cost effective NI USB CAN.
- First time success
 - o Working closely with the customer, the Front Panel and control sequences were created through a mutual design effort.
- Early requirements validation.
 - o Additional required features were identified early and integrated into the “on-time” solution.
- Product lifecycle was shortened.
 - o A working test fixture was delivered within 4 weeks of project kick-off.
- Reusable blocks save extensive development costs.
 - o The Fastek solution is scalable for 1 to 16 switches under test in one test fixture; and is re-scalable to support parallel testing using multiple test fixtures.



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