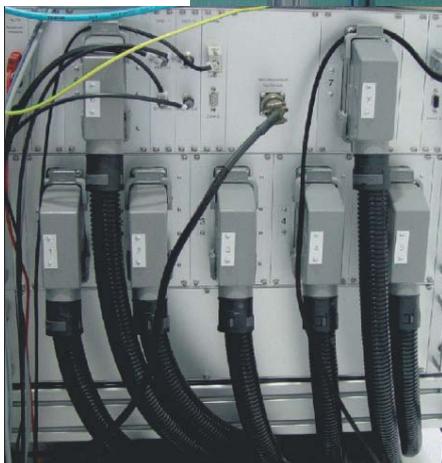
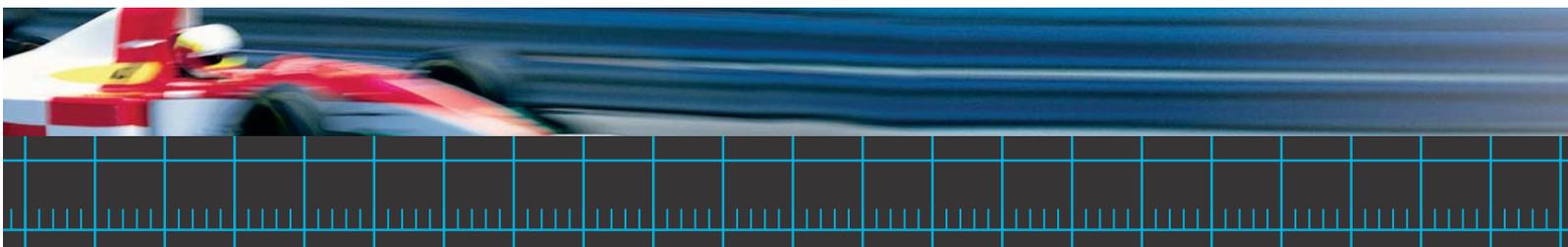


Familiar

In early every day engineers invent new devices to make life easier and more convenient for us. When, in 1885, the imperial patent office issued a patent for the first working picture decomposer, the predecessor of our television, no one would have dreamed that one day we would receive digital pictures directly out of space via satellite. When the automobile was invented no one, would have believed that the vehicle, erstwhile used as a pure conveyance, could one day drive along our streets as a rolling office and communication center. In the former means of transport one now can watch television, surf the Net, make phone calls, or send faxes and e-mails. Naturally all these innovations need long development periods and extensive tests.



DELPHI
Driving Tomorrow's Technology



If one bears in mind that at the beginning of the eighties a medium-sized car had one electronic ignition and that nowadays cars have more than 40 electronic devices that control a lot more than just the ignition, one can imagine the development effort that has happened in the past 20 years. But there cannot be mass production without extensive test and trial runs. Due to liability cases (especially on the American market where coffee cups warn that their content is hot and might burn you) and with increasingly complex electronic systems the development phase and test phase are becoming the decisive success factor of a new product.

A modern control device, for example, for driving comfort functions such as seat adjustment or light management, alone has over 100 inputs and outputs as well as different bus systems (CAN, LIN, MOST etc.). The functions of the E/A components must be tested extensively in order to guarantee vehicle safety and customer acceptance. To make the test phase as efficient as possible and to keep the test period as short as possible it would make sense to support the development of a product over the entire run-time with a standard test system developed specifically for this purpose. This would ensure that the measurement values could be reproduced and that the test engineers did not have to constantly work with new systems.

Using standard components also helps to keep the costs down and enables usage in other locations because obtaining spare parts is easier (availability, delivery times). Unfortunately it is seldom possible to design a test system that meets the demands of the test engineers 100% purely from standard components.

Adjustments will always be necessary to obtain a test system with the best possible performance and flexibility. And this is where we, measX, can help. Our systems are predominantly created with standard components and customized adjustments are reduced to a minimum. This conscious decision provides the certainty that the standard components are readily supplied. Our concept also reduces training costs for our customers' staff. Based on our experiences of the past years we have managed to create a test system that is mainly composed of National Instruments standard hardware in addition to measX-special developments. X-Test covers nearly all sectors in the automobile industry, which focuses on testing all types of control

devices. The structure of X-Test is modular which enables a quick and cost-effective adaptation to new conditions.

This design concept helps to solve various problems and to reduce time and effort as well as to ensure that the test system can be used again. Thus, cost of ownership is notably lower than with test systems devised for certain types of systems only. One example for the implementation of X-Test is a test stand for control devices for comfort electronics in a vehicle.

X-Test supports all current bus systems such as CAN or LIN as well as standard inputs and outputs on an analog and a digital basis. X-Test has precise voltage-supplies with a high current capacity (0 – 15 Volt with 0.1 mV accuracy and 100 mA current capacity), relays with opto-decoupled control inputs, self test functionality, and the possibility to include this system in the end of line production.



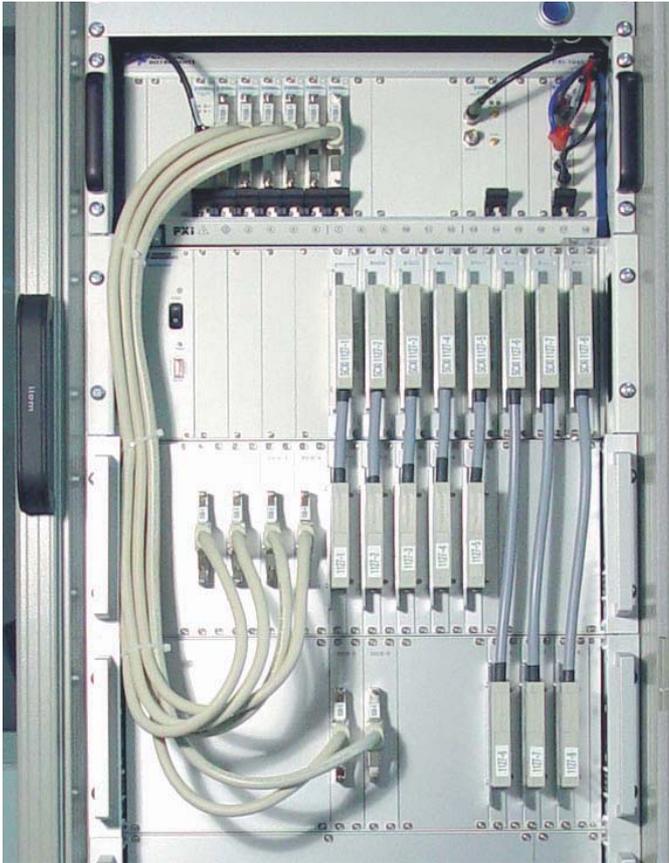
X-Test test processes can be easily programmed with NI standard SW platforms such as LabVIEW and TestStand. The structure of the driver is so flexible that X-Test can run with high level languages such as C++ or .net.

X-Test modularity enables a quick and cost-effective adjustment to the requirements of the devices to be tested. The tester described here was developed in cooperation with the Test Competency Center Body and Security Electronics of the company Delphi Germany.



It contains

- PXI4070
- PXI5401
- PXI6508
- SCXI1127
- PXI8330
- Flex DMM
- Function Generator
- DIO Board
- Switch
- MXI-3 to communicate with an industrial computer



measX realized the following board types as special developments:

- MX PowerAO Voltage generation
- MX Switch
- MX Relay
- MX Load (0-13 Volt with 0.1 mV precision and 100 mA current capacity)
- CAN switch for low and high speed
- Plug-in module with simulated loads and overload protection
- Relay board with decoupled control inputs
- MX DIO driver circuit board for TTL DIO channels

These boards are included in our portfolio and can be purchased individually.

Because contacting the test samples is different from type to type we have chosen a wire and wrap technology on „DIN41612 plug panels“ in order to guarantee a flexible connection of the test sample. This has the advantage that small changes can be accomplished by „rethreading“ and larger changes by exchanging a complete adapter. Users like this conductor standardization technology because it is safe to operate and it is flexible.

A further important point is the maintainability of the system. All the devices that need maintenance are subject to self tests. This enables the user to check the accuracy of, for example, the resistance values of load simulations before a measurement starts, because these values can change beyond their specified limit values due to the natural aging process. This reduces the danger of incorrect tests to a minimum. The modular structure and the intelligent cabling within the tester ensure that even untrained maintenance staff can service the system. With X-Test you get very good value for money and a test system with a very high reusability potential. Costs are reduced and you, the customer, will be satisfied.

Dino Heuser, Bruno Hildebrandt

