

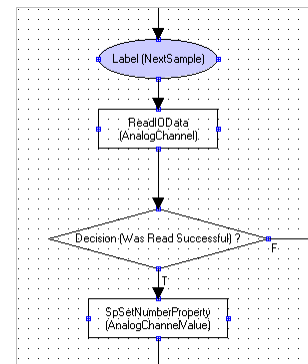
Test Systems – Driver Assistance System Testing

Driver assistance systems are characterized by dense, high-bandwidth data streams from sensors surveying the external vehicle environment such as laser, ultrasonic, or radar sensors that provide object detection, range, and azimuth. Repeatable playback of these data streams is crucial for testing the assistance module firmware and performing functional testing during DV, PV, and manufacturing End-Of-Line testing.

EnGenius’s MultiCom 4™ vehicle network interface adapter supports custom network drivers that can provide high fidelity simulations of sensor data playback while responding to commands from the controlling module to the sensor(s) to change operating state.

Module Firmware Validation

The EnGeniusTEST™ platform, built on National Instruments TestStand®, provides a highly capable test development and execution platform. Using EnGeniusTEST you can develop tests that integrate network messages with analog and digital I/O to effectively and repeatably run test cases in a “black box” test environment achieving up to a 90% reduction in test time over manual test case execution with the added benefit of automated data collection of network and I/O transactions and test point results that can be used to describe the conditions that led to the detected failure.



A recent driver assistance validation project required high bandwidth playback of radar sensor data. The MultiCom 4 adapter was used to playback the simulating radar sensor data that required 50% utilization on a 500K CAN bus. Algorithm testing required a rolling playback of over 100 actual encounters between a test vehicle and other vehicles on the road. EnGeniusTEST was used to implement over 350 test cases across three driver assistance module firmware and hardware configurations.

DV & PV Testing

DV and PV testing requires continuous and intermittent powered operation of the module during an environmental chamber profile. During operation the module needs the appropriate sensor data stream, network messages, and analog and digital inputs to ensure that the module is in its normal operating state. During testing the module must be continuously monitored for proper operation by comparing network messages and analog and digital outputs against their expected contents, values, and timing to determine if the module is operating properly. Multiple modules can be tested in parallel with the fidelity of single module testing.



EnGeniusTEST supports the reuse of test components developed during software validation for DV and

PV test applications – shortening the development time and prove-out of the test system and applications.

EnGenius supplies turnkey multi-station test systems for DV, PV, and other engineering test applications. The test applications can be developed in EnGeniusTEST, LabView®, TestStand, C/C++, and Visual Basic.

Manufacturing End-Of-Line (EOL) Testing

EOL testing of complex electronic control modules has changed over the years from a quick I/O test to more comprehensive process that includes a brief functional test in a simulated vehicle environment. This requires sensor data streams, network messages, and digital/analog I/O put the module in the desired operating states and analyzes the output for correct operation. Additionally, an automated test fixture may be needed to handle the module during the EOL test.

The reuse of test application components from the DV and PV test applications reduces the EOL test development and prove-out time.

EnGenius supplies custom single and multiple station test systems for manufacturing EOL test applications. The test applications can be developed in EnGeniusTEST, LabView®, TestStand, C/C++, and Visual Basic.



In-Plant Recertification

As any supplier of electronic control modules knows, returned modules that report “No Problem Found” when retested can be a significant cost driver. Adding a recertification facility in the assembly plant or in a facility nearby can reduce the cost of returned components or provide early warning data on emerging problems.

A recertification test system can be built as an enhanced EOL tester that runs the tests required to confirm correct operation or flash updated module firmware without the cost and time associated with a trip back to manufacturing.

In addition to the EnGeniusTEST platform and the MultiCom family of multiplexed network interface adapters, EnGenius provides outsourced network compliance testing, test case development, software validation, and custom “pot boxes” to support software development and validation testing.

For more information

Visit our website at www.engenius.com.

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