



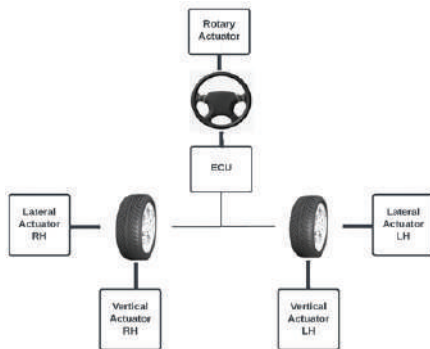
YOUR TRUSTED PARTNER IN HIL SOLUTIONS

End-to-End Hardware-in-the-Loop Systems for Next-Gen Development...



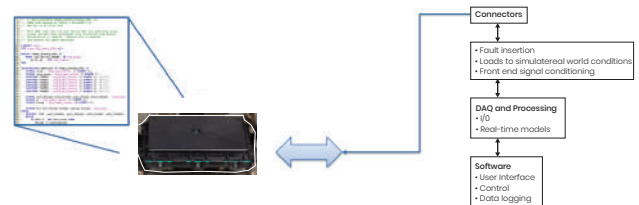
Case Studies

STEERING HIL



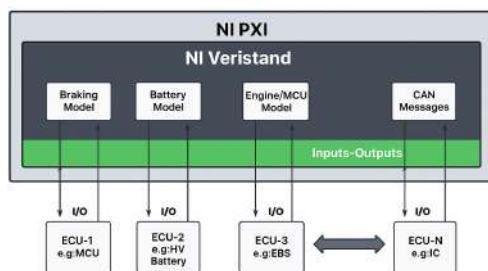
- TMCS developed an HIL test rig for validating EPAS/HPAS steering systems.
- Built with NI VeriStand, LabVIEW and PXIe hardware.
- Enables multi-actuator simulation, PID control and automated data logging.
- Modular, scalable, and ensures accurate, repeatable steering validation for R&D and production.

ENGINE VCU HIL



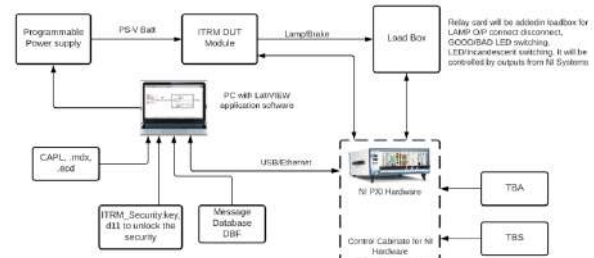
- TMCS developed an HIL system to validate VCUs for electric and hybrid vehicles.
- Built with NI PXIe, LabVIEW and VeriStand for real-time simulation.
- Performs CAN, I/O, load and calibration tests with automated control.
- Ensures reliable and high-performance VCU validation under simulated conditions.

HIL FOR ELECTRIC BUS VCU



- TMCS developed an NI-based HIL platform to validate VCUs for electric buses.
- Uses NI PXI, VeriStand, TestStand and LabVIEW for real-time drive cycle and fault simulation.
- Enables automated, repeatable and traceable testing of performance, safety and diagnostics.
- Supports Simulink integration, ensuring safe virtual validation while reducing prototype use, test time and risk.

HIL FIRMWARE



- Real-time simulation of vehicle systems using NI PXIe with LabVIEW, VeriStand & TestStand.
- Validates embedded firmware via CAN FD communication with ECU.
- Enables automated test execution, data logging and report generation.
- Scalable architecture supporting CAN, LIN, Ethernet & multiple ECU configurations.

AutoHIL

EXPERIENCE THE FUTURE OF ELECTRIC AND VEHICLE MOBILITY!

The Hardware-in-the-Loop (HIL) Demo brings an interactive showcase of an Electric Vehicle's intelligence — from the Vehicle Control Unit (VCU) to the digital instrument cluster (HMI) — all powered by **NI LabVIEW, VeriStand and TestStand**.

WHAT YOU'LL SEE

- Real-time interaction between VCU & HMI cluster
- Charging scenarios
- Faults and alerts simulated live on screen

LIVE SIMULATION. REAL-TIME RESPONSE.

Watch real-time vehicle behavior come alive as we simulate:

- Ignition, Brake and Gear Shift
- Throttle & Drive Mode (Eco / Normal / Sport)
- Indicators, Headlights and Horn
- Battery & Ambient temperature Conditions

KEY FEATURES

- Real-time simulation and fault injection
- Closed-loop interaction between VCU and cluster over CAN
- Automated test sequence execution and result logging
- Visualization of system responses on the HMI display
- Modular and scalable design for future EV subsystem

APPLICATIONS

- Functional validation of VCU & Cluster
- System response and fault handling analysis
- Demonstration of Test Sequence control logic
- Prototype and algorithm verification
- R & D Setups



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About Us

Established in 2013, TMCS is a leading provider of industrial automation, test, measurement and control solutions, empowering clients to achieve superior technological performance. As a trusted NI System Integration Partner, TMCS designs customized systems that integrate advanced measurement hardware, intelligent software and precision control architectures. Serving global industries such as Automotive, Aerospace, Defence and Appliances, TMCS continues to deliver innovation, reliability, and excellence across diverse projects.

