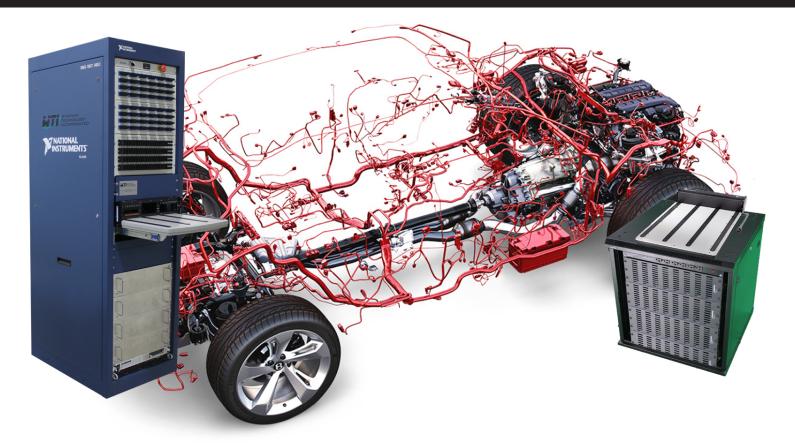


# Hardware-in-the-Loop Test Systems





## **Single Point of Contact for HIL Solutions**

We're the experts at building state-of-the-art test systems, and we work with the best partners for specialized areas of expertise. Trust us as your single point of contact for the entire project.



## Advanced Technology Ready for Any Challenge

NI develops cutting-edge technology for a multitude of markets, so we know the NI platform has proven tools to solve the latest challenges envisioned by the automotive industry.



## **Fast Quoting, Smooth Delivery**

Give us the ECU pinout, answer a few questions, and we provide you with the right package and pricing. We'll do all the heavy lifting of matching your needs with our solutions.

Contact us for help building a customizable, cost-effective HIL test system.





## Open, Off-the-Shelf Technology

Wineman Technology standardizes on the NI platform because its high performance can handle the rapid adoption of new technologies and its openness plays well with industry standards and other vendors' tools. Key components of our HIL systems include:



#### VeriStand

This real-time testing and simulation software significantly reduces development and test time. Its out-of-box functionality includes configurable data logging, test sequencing, stimulus generation, and model execution. Most notably, VeriStand has the ability to accept custom code and simulation models from other environments.



#### **TestStand**

As the go-to test management software, TestStand helps engineers quickly build and deploy automated test and validation systems. Develop and execute test sequences using code written in any language. Plus, use extensible plug-ins for reporting, database connectivity, and more.



#### **PXI and CompactRIO**

These two hardware platforms combine high-performance real-time controllers with a modular architecture. We balance performance with cost to help you select the right modules for multifunction I/O, RF, fault insertion, and more. We also utilize FPGA modules for deterministic testing, closed-loop control, simulation, and custom protocols.



#### SLSC

The Switch, Load, and Signal Conditioning (SLSC) platform smoothly integrates with the rest of the NI real-time platform and reduces signal routing complexity. These off-the-shelf modules use high-power relays for signal switching, power loads, and additional inline signal conditioning capabilities.



### Connectivity to DUT

For greater flexibility and reliability, we use a mass interconnect that allows the test equipment to quickly connect with the device under test (DUT) in one clean move. This setup also allows for easy switching between different ECUs or even different configurations.



#### **FIU and Test Panels**

Due to the scalable, modular design of our HIL systems, options like fault insertion and breakout test panels can be easily and cost effectively added to a system during build or after deployment.

# **Automation Services**

In addition to test system deployment, Wineman Technology also offers engineering services to assist in developing full automation scripts, custom operator interfaces, test profiles, and more.





