

VCU Test Bench



SPECIFICATIONS / FEATURES

- Executes predefined sequences for ECU verification
- Supports CAN communication protocol
- Captures test results for traceability and quality control
- Protection mechanisms to prevent damage
- Modular, CE-compatible and easy to maintain

CHALLENGE

Functional validation of 2-wheeler ECUs is performed at the production end-of-line to ensure reliable performance and compliance with quality standards. The process involves accurate testing of digital, analog and communication signals to verify proper functionality. It is designed to reduce test cycle time while maintaining high levels of safety, consistency and traceability throughout the production process.

SOLUTION

TMCS developed a dual-station electromechanical EOL test bench with modular and CE-compliant design. The system integrates NI hardware, LabVIEW software and NI TestStand to execute predefined test sequences and verify ECU functionality. Adjustable fixtures and cross-ferruling support multiple ECU variants efficiently.

TEST TYPE	DESCRIPTION / PARAMETERS MONITORED
CAN-based DUT Identification	Verifies device communication and identification via CAN protocol.
Digital & Analog Input Testing	Ensures accurate response of input channels under test conditions.
Load Test / Digital Output Check	Validates output performance and load-handling capability.
Fault Insertion Unit (FIU) Test	Simulates fault conditions to assess system robustness.
Calibration Test	Confirms signal accuracy and sensor calibration integrity.
Electromechanical Functionality	Tests operational behavior of mechanical and electrical systems.

TECHNOLOGY USED

- NI Hardware & LabVIEW Software
- NI TestStand for test sequencing
- Modular fixture design with high accuracy

