USE CASE: LHP HELPS OEM PUBLISH NEW END-OF-LINE TESTING STANDARDS

CASE STUDY

Lhp

CHALLENGES

LHP has worked with the original equipment manufacturer (OEM) in this case with over $5 billion in revenue for many years, and has showcased LHPs value and expertise through various projects. Due to LHP's exemplary work, the OEM directed its Tier 1 supplier to work with LHP to meet its testing standards. The OEM published new manufacturing End-of-Line (EOL) testing standards which the Tier 1 supplier was not able to meet with their existing system. The OEM needed LHP to understand the Tier 1 supplier's existing testing systems, and improve the accuracy and efficiency of EOL tester. The Tier 1 supplier's current EOL tester did not meet the calibration, validation, and functional test standards the OEM required for production. The missing validation step was a critical component in achieving a proper EOL test.

THE SERVICES DELIVERED

The existing Tier 1 supplier's testing process involved an EOL station, a Burn-In station and a Programming station. A common database utilizing Microsoft® SQL server was set up and shared among nine racks. The Tier 1 supplier originally only had one rack and wanted to scale it to nine racks in order to meet the data validation requirements set forth by the OEM. The Tier 1 supplier found it difficult to share information between the nine racks and needed a way to coordinate data between tests, thus turning to the solution - Microsoft® SQL server. The Programming station loaded the OBC control software to the OBC. The EOL station calibrated and validated the OBC sensor reading then tested the functional feature of the OBC. The Burn-In station tested reliability and the functional feature of the OBC running for 3 hours under extreme conditions at 85°C (185°F).

ABOUT THE PROJECT

Industy
- Automotive

Company Name
- Leading Global EV Solutions Provider

Tools/Technologies/Skills
- Microsoft® SQL (Structured Query Language) Database
- NI™ LabVIEW

Goals of the Project
- Update the manufacturing End-Of-Line (EOL) test system to meet OEM requirements

Application Area
- End-of-Line Testers

The project goal was to update the EOL testing software to meet the new OEM standard, create a shared database between the EOL and Burn-In stations, and to make it extensible to add multiple stations of various types in the future. During implementation LHP set up and configured a Microsoft® SQL database server instance and provided database design documentation. LHP also added the functionality of storing data, enabling multiple clients to interact with the database. LHP developed a database schema programmed to handle multiple stations and serial numbers, and to coordinate data between multiple racks. LHP delivered calibration, validation, and functional test features to the Tier 1 supplier, and implemented NI software updates to integrate software and hardware. The NI™ LabVIEW software upgrades included interfacing with automated test systems and record-keeping systems.

HOW SERVICES HELPED

With the existing EOL system, the Tier 1 supplier was unable to meet OEM test standards. By the end of the project, the Tier 1 supplier was able to meet the OEM standards. The LHP team also helped the Tier 1 supplier by improving efficiency of the EOL testing system, reducing testing time by 50 percent. In addition, LHP resolved a pre-existing issue with serial number tracking that was created by the nine racks allowing all serial numbers to be shipped in sequential order, per the request of the Tier 1 supplier. By deploying Microsoft® SQL server, LHP helped create a single source of truth for all serial numbers across the nine racks. LHP used the Unified Diagnostic Services (UDS)

to identify which CAN protocol is used. The UDS CAN protocol was used to communicate with the OBD. LHP is using the UDS CAN protocol to communicate with the OBD to clear the security, change the calibration value, and read the version number from the OBD.

RESULTS, ROI, & FUTURE PLANS

LHP and the Tier 1 supplier are continuing discussions on the success of the current project and improvements that can be made to the EOL tester system by setting up and configuring Microsoft® Azure cloud server, allowing the Customer to have backup and recovery copies. The new updates will also allow the Tier 1 supplier to build out custom reports, look up specific tests by Traveler Number, and give information including controller area network (CAN) log and screenshots of the final test screen.

LHP successfully navigated the discussions between the OEM and the Tier 1 supplier given LHP's knowledge and expertise working with a diverse customer base and different executive levels. LHP will continue to strengthen its relationship with both the OEM and the Tier 1 supplier.