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AIR BAG TESTING

Test Rig Automation

LAB VIEW BASED SOLUTION



PROJECT DESCRIPTION:

An Air Bag is a Vehicle safety device. It is an occupant restraint consisting of a flexible envelope designed to inflate rapidly in the event of a collision, to prevent vehicle occupants from striking interior objects such as the steering wheel or window.

PRODUCTS USED:

NI-PCI 4070 DMM

NI – USB 6501

NI-LabVIEW

THE CHALLENGE:

Developing a data acquisition system for Measuring the Resistance, Insulation Resistance of Air Bag and acquiring tightening torque feedback from the Nut Runner. To view production quality or any defects reported in the seats.

SOLUTION:

National Instruments LabVIEW and NI- PCI 4070 DMM, NI- USB 6501 were used to develop a highly reliable and flexible Data Acquisition and Control System resulting in improved inflation response time and increased accuracy.

"The new system in improved inflation response time, increases vehicle occupant's safety, and with the increased accuracy of our hardware, we can deliver a higher-quality rugged system."

REQUIREMENT:

- Resistance and Insulation measurement of the Airbag
- Acquiring tightening torque feedback from the Nut Runner as digital input
- Clamping of seat in the fixture
- Logging of the above data for each seats

NI PCI & NI USB Based Automation System

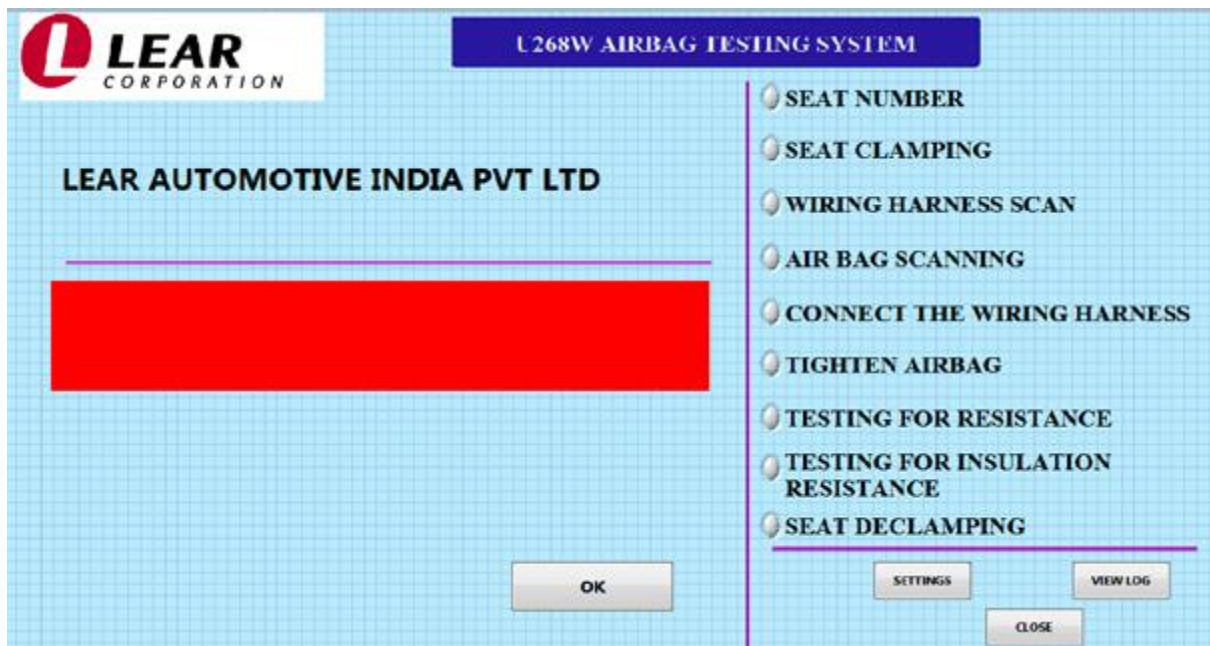
The Data Acquisition System (NI PCI 4070 DMM) is used for Measuring Resistance and Insulation Resistance. NI USB 6501 is used for Digital Input and Output measurements.

Purpose:

- Resistance and Insulation Resistance value shows the healthy condition of the airbag
- Airbag is fixed to the seats sideways to ensure it is fixed firmly to the seat feedback from Nut runner is acquired
- Packing, assembling and testing of seats are done, when it is placed on the fixture, Seats are clamped in the fixture before testing
- To view production quantity or any defects reported in the seats, test results of seats are verified in the future.
- Logging test results in computer are very necessary.

Scope:

- Measuring Resistance and Insulation Resistance of Airbag
- Product identification through barcode of airbag and wiring harness cable
- Range of Torque value of airbag fixing
- Logging of all the data's such as barcode of airbag and wiring harness cable,
- Resistance and Insulation Resistance of the airbag
- Report generation in excel with above data on monthly, Airbag and wiring harness Wise with respect to date.



CONCLUSION:

The Air Bag Testing System was successfully developed as a professional application in the quickest possible time with all hardware integrated effortlessly. Using LabVIEW, proved to be the best platform for measurement and testing in this project. The PCI-based system helped in overcoming various short comings of the earlier employed manual system.