DESIGN, BUILD, LEARN, IMPROVE

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What Battery Recalls Can Teach Us Before the Next Launch

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A question I brought home from Novi



At Automotive Testing Expo in Novi, Michigan, I spoke and moderated sessions, including a fireside discussion about transparency. Here is a question I would bring to any project review. If I handed you a passing test report this morning, could you tell me which version of the product you were about to approve?

Suppose the report identifies the hardware and software, but the technician had to change a calibration to finish the run. I want that observation on the first page, where the person signing the release will see it. Then we can ask whether the production calibration needs another run. A technician who can raise that point in the room has done the project a service.

Read more about transparency in embedded systems testing

Two defects in one battery cell

I've been poring over NHTSA recall records for the battery book that grew out of my Battery Show South presentation in Charlotte. One detail in the Chevrolet Bolt record stopped me. GM reported that a torn anode and a folded separator had to occur together in the same cell to create the fire risk it had identified. In its September 2021 dealer update, GM described changes to cell manufacturing and plans to ship replacement battery modules.



Put that case on the table at your next project review. If two teams each studied one of those defects, where would their findings come together? I would ask the cell supplier and the pack team to walk through the process failure analysis together. Show me where each defect could arise, which inspection could detect it, and what evidence we have about the two occurring together. Those are questions I take from the recall record and bring back to development.

GM dealer update for NHTSA recall 21V-650

My thanks to Richard Rodberg for raising sodium batteries in his LinkedIn response to the book preview. Richard, you gave me a question worth carrying into the manuscript. If a program selects sodium-ion cells, which assumptions in its existing verification plan should the engineers revisit first? I'd welcome an example from anyone working through that decision.

The connector passed continuity. How much margin remains?



Consider a connector that passes continuity before and after an environmental test. The circuit still conducts. Now suppose we also measured contact resistance and it increased. How much did it move relative to the allowable limit? That is something the continuity check alone could never tell us.

Before calling it product aging, I want to know whether we can reproduce the measurement. Use the same method and comparable temperatures, account for the fixture, and establish how much variation the measurement system contributes. If the change holds up, we have something specific to investigate. We can also revisit any model that still assumes the resistance of a new connector.

Read more about pre-test and post-test characterization

The tools have already been ordered

Those words change what a design review can accomplish. I used to tell teams that the price of entry was a marked-up drawing. Give people the drawing and time to study it before the meeting. Then ask them to bring one failure assumption they think we can settle while we still have a choice about the tooling.

Take a molded connector latch. The design failure mode and effects analysis may identify incomplete engagement. Bring prototype housings to the review and ask how we would test retention across the proposed dimensional limits. Agree on what result would change the geometry, who will run the test, and when tooling needs the answer. Now the project manager has a reason to protect that test date.

Read more about design reviews and DFMEA preparation

From our North Carolina bench

At Value Transformation, we supply assemblies and rework wire harnesses for a terminal tractor company. Harness rework brings configuration management down to the bench. Imagine a technician with two drawing revisions in hand. Both show the same connector. One assigns a wire to a different cavity. Which revision applies to the harness on the bench, and which revision does the end-of-line tester expect?

That is a useful check for any rework job. Match the incoming assembly to the authorized change, give the technician the applicable instructions, and record the test result against the finished configuration. The next person to handle that harness should be able to tell what changed and how it was checked.

As Thanksgiving approaches, thank you to the readers, customers, and colleagues who take the time to share what you see in your own work. Think about your next launch. Which assumption would you most like to test while you still have time to change the design? I'd enjoy hearing your answer.

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In This Issue

• Testing Transparency
• Battery Defects ala NHTSA
• Margin
• Tooling

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