

## Challenge

Electrically operated transfer cases (found in sport utility vehicles for example) must be tested before installation to eliminate flaws such as poor gear meshing, faulty motor windings or a defective actuator. Post-installation testing is difficult, unreliable, expensive, and risks customer complaints.

## Solution

Much can be learned about the internal health of an electrically operated transfer case by analyzing the electrical current in the time domain, along with the shift state of the transfer case.

Sciometric offers turnkey solutions for several test scenarios, built on the sigPOD® platform. One input channel monitors current supplied to the transfer case, and the other monitors the shift state command from the test stand.

Current vs. time curves are compared to acceptable signature curves for each shift state, yielding an instant pass/fail status for the part. If a flaw is detected, the curves are analyzed to pinpoint the flaw in the transfer case.

## Results

A test stand running a rigorous series of shifting operations using Sciometric technology is capable of quickly passing healthy transfer cases, and rejecting faulty ones. It accurately determines the cause of the defect, allowing for easier rework and improvement to the overall manufacturing process.

In-process testing with real-time pass/fail reduces the cost of installing faulty transfer cases in a vehicle, leading to lower verification and repair costs at the factory, and increased customer satisfaction. Warranty program costs are reduced.

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## TRANSMISSION NVH TESTING KEY FEATURES

- High speed test throughout
- Defect detection: poor gear mesh, motor winding defects, defective actuator
- Verify all shift states: N to 4Low to 2high, 2High to 4High etc.
- Ease of use for any operator



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