

### Challenge

A major Transfer lines are commonly employed in manufacturing processes to move parts on an assembly line from one stage to the next. The transfer lines are often subjected to substantial loads and forces during the transfer process. A transfer line that was being used to transfer automobile bodies on a body weld line began experiencing problems with pin shear that were causing increased maintenance costs and downtime.

The transfer line consisted of a 200-foot-long beam which raised the body panels approximately 24 inches, moved them horizontally and then lowered the parts to the next station. To avoid damage to the system, a shear pin – designed to break if the force was too great – was used to connect the swing bar and the beam. The force required to complete the transfer process became a concern when the manufacturer began encountering problems with pins shearing on a regular basis.

### Solution

For 15 seconds the Sciometric system monitored and collected the compression and tension force data, including waveforms, from a load cell configured on the transfer line. (The entire transfer process occurred in 11 seconds.) The analysis of the peak values and signatures by Sciometric software quickly determined that the transfer line was experiencing a counterbalance issue at rest. The right side of the transfer line had been experiencing a greater load at rest than the left side, as shown in the screen capture, and as a result was being subjected to a much greater load during the transfer process.

Using this information, the operator was able to calibrate the compression and tension readings so that they were equivalent, minimizing the load on the system. During the transfer process, the Sciometric monitoring system

### KEY TEST FEATURES

- Fast and accurate fault definition
- Decreased maintenance costs
- Reduced assembly line downtime

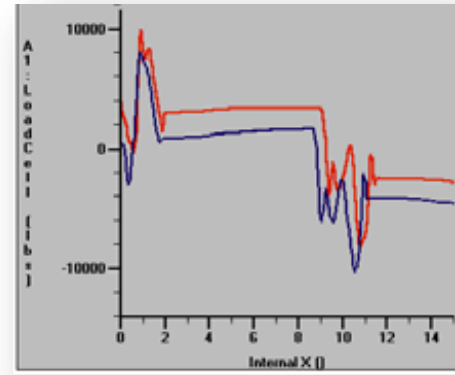


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ensured that a digital output was closed if specifically determined limits were exceeded, that a fault signal was sent to the PLC if the load was too great in either direction, and a warning limit signal was sent if the fault limited was exceeded.

## Results

Previous attempts by the integrator to solve the pin shearing problem had been unsuccessful. Sciometric's signature analysis technology identified the root cause of the issue and enabled the manufacturer to address it, reducing both maintenance costs and production downtime.



*Sciometric system screen shot outlining signature waveform indicating transfer line Left and Right side counterbalance.*

## SCIOMETRIC SOLUTIONS

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