

RACE CAR SUSPENSION TESTING

INDUSTRIES: AUTOMOTIVE AND VEHICLE / TEST MEASUREMENT

SUMMARY

Customer Need / Challenge

Race car suspensions require fine tuning for best performance on various tracks.

Simulation of bumps, banking and other track conditions result in off-axis loading.

Interface Solution

Interface 1200-series load cell mounted on top of each post in a 4-, 5-, or 7-post rig allows race teams to measure forces during simulated laps. Moment compensating design of 1200-series load cells provide accurate readings during off-axis loading.

Results

Highly accurate (0.04%) measurement of loads applied to individual suspension points.

MATERIALS

Interface Products

- 1200 Standard Precision LowProfile™ Load Cell

Alternate Setup

- Model 1000 Series Fatigue Rated Low Profile Load Cells
- BSC4-USB 4-Channel PC Interface Module with display logging and graphing software

Additional Materials

- Vehicle suspension test rig
- Data acquisition system

HOW IT WORKS

1. A multiple-post vehicle suspension test rig is built into or under the floor of a race team facility. A 4-post rig tests forces at each wheel; 5-post rig adds a rear suspension point and a 7-post rig tests aerodynamic forces in addition to road (wheel) loading.
2. An Interface 1200-series load cell is mounted on each post.
3. Hydraulic actuators individually apply forces to each post to simulate the surface conditions of the track.
4. Load cells measure the aggregate of the forces being applied from both the post on which the load cell is mounted and forces from other posts being applied to the vehicle (such as when simulating a banked surface).
5. Load cell output is fed to the control system to determine cylinder force required to produce the correct force to simulate the track condition.

