

## HARNESS DURABILITY TESTING

INDUSTRIES: INDUSTRIAL AUTOMATION / TEST AND MEASUREMENT

### SUMMARY

#### Customer Need / Challenge

Harnesses are often used to strap humans of various weights to safety equipment or sports gear.

Harness manufacturers must determine load and durability factors for harnesses and their attachment points.

#### Interface Solution

A drop test apparatus uses an Interface Model 1200 Load Cell attached to a cable and loaded harness. The loaded harness is dropped from a specified height to measure the force generated during sudden stop at maximum cable extension.

#### Results

Engineers determine the total force on the harness for various body weights dropped from maximum usage heights to set harness limits.

Tests can be repeated numerous times to determine fatigue and durability limits.

### MATERIALS

#### Interface Products

- Model 1200 Standard Precision LowProfile™ Load Cell rated at 5,000 pounds-force (lbf) and fitted at the factory with either one or two rod end bearings, depending on test configuration.
- INF-USB2 Universal Serial Bus Single Channel PC Interface Module

#### Alternative Setup

- Model 9860 High Speed Digital Indicator
- Model 9330 High Speed Data Logger

#### Additional Materials

- Drop test apparatus
- Harness cable
- Customer laptop

### HOW IT WORKS

1. Test engineers place the harness to be tested on a dummy of known weight.
2. The loaded harness is attached to one end of a cable. Ideally this is the same type of cable used to attach the harness to the sports equipment or safety device. The other end of the cable is attached to the bottom of Model 1200 load cell fitting with a rod end bearing.
3. The top of the Model 1200 Load Cell attaches to the cross beam of a drop test apparatus, either directly or via another cable.
4. The loaded harness is winched to the top of the drop test apparatus, and then dropped. When the cable fully extends, the load cell measures initial and subsequent forces experienced as the loaded harness stops and bounces.
5. The load cell sends force measurement data to a laptop through an INF-USB2 connection.

