

Title:

What is a Load Cell?

Overview:

I'm often asked, "What exactly is a load cell, and what does it do?" The simplest answer is that a load cell is a sensor that tells you how much things weigh, similar to how a thermometer is a sensor that tells you how hot or cold something is.

The next most common question is, "How does it work?" To fully answer that requires a much more complicated answer, which is beyond the scope of this Technical Bulletin - I would have to write an entire book to really explain it! Thankfully, others have already done that. In a nutshell, however, a load cell is built in such a way that it can take a 'physical event', such as a weight being loaded on to it, and convert it into an 'electrical signal' that can be processed by an indicator or computer to be displayed as a number on a screen.

Sometimes a load cell is misnamed as a 'strain gage' or 'scale', so just to help clear up the confusion in terminology - a strain gage is used to build a load cell, and a load cell is used to build a scale. Think of it like this:



One of the coolest aspects of a load cell is that it is truly an electro-mechanical device - it acts as a 'bridge', or translator, between the worlds of Electrical Engineering and Mechanical Engineering. That means in order to be a Load Cell Engineer or Designer, you must have an understanding of both types of Engineering disciplines. Another really cool aspect of load cells is that they're not just confined to planet earth. Load cells are used by the aerospace industry in satellites in orbit - there's even a load cell on the Curiosity Mars Rover that is used to measure force and torque on its robotic arm!

Like a lot of things, load cells are tools that we almost all use every day and don't even realize it. If you stepped on a bathroom scale this morning, bought a pound of potato salad at the grocery store, or picked up a prescription at the pharmacy, then you used a load cell. Many industries around the world use load cells as part of their operations, such as seaports, over-the-road trucking, manufacturing, and especially, agriculture. So more likely than not, almost every product or material you used today was weighed with a load cell at some point in its lifecycle.

References:

www.northstarloadcell.com

<http://www.futek.com/application/aerospace-defense/MSL-Mars-Rover>