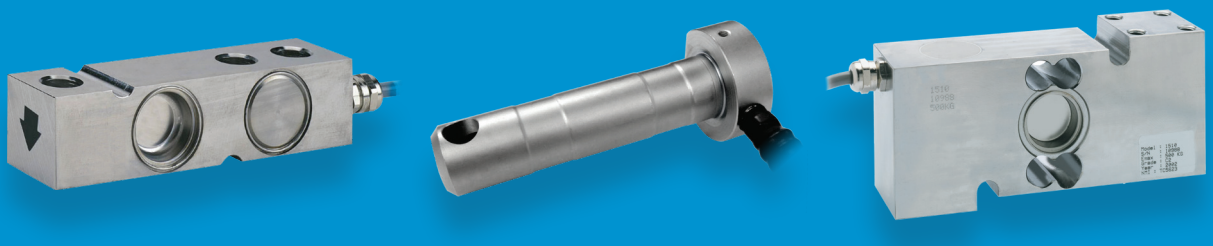
VPGforcesensors.com

Helping you feed the world

Agriculture market solutions



VPG force sensors

Celtron ▪ Revere ▪ Sensortronics ▪ Tedea-Huntleigh

Bringing the best together

VPG Force Sensors brings together products from several well-known brands.

Celtron
Revere
Tedea-Huntleigh
Sensortronics

Tedea-Huntleigh, Sensortronics, Revere and Celtron are united in a commitment to uncompromising quality, and have been leading suppliers of weighing and force measurement products for decades. Superior load cells and strain gage know-how combine to deliver the most advanced sensor technology available. In addition to standard products, VPG Force Sensors' extensive experience and proven design capabilities make it possible for the company to supply a wide range of applications and specific products and solutions.

Feeding a hungry world

As the world population grows, farms face additional pressures to produce enough food to keep pace. But as weather patterns shift, farmers are confronting increasingly difficult conditions: heat waves, droughts, falling yields, rising flood risks and a shrinking amount of arable land.

Meeting these challenges calls for ingenuity and efficiency. This is where VPG Force Sensors can play a key role as your partner. As a recognized leader in advanced strain gage technology, and a supplier of custom products to a range of industries, VPG Force Sensors has proven its ability to apply innovative thinking and best practices to today's agricultural needs. Let's work together to improve your operations, and help make sure the world never goes hungry.

Harvest grain tank weighing

Accurately measuring the yield

With farms covering ever-larger acreage, farmers know it's essential to understand how grain yields vary in different areas of their fields. By analyzing many small sections, they gain valuable feedback, and learn which areas require extra attention to maximize yield.

To aid in this process, VPG Force Sensors custom-designed a single point load cell for installation around the internal storage tank surface of a harvester. Engineers then developed an innovative software algorithm that allows farmers to communicate with the load cell using the CANbus communication protocol.

The load cells collect force readings created by the grains collected in the storage tank: farmers can use this information to analyze the yield return of the field. As a rule of thumb, a good yield result is identified by a greater force reading in a smaller area over a shorter time span.

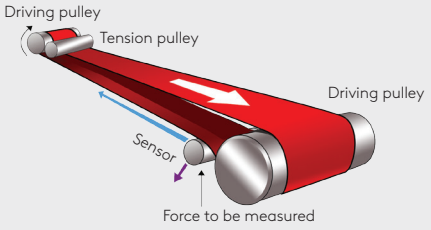
Combine harvester tensioning system

Providing early warning and preventing expensive damage

Combine harvesters are expensive, and at harvest time they're in the field 24/7. Any downtime is costly, both for the equipment and for farm operations. Complicating the maintenance challenge is the fact that combines are typically used to harvest many types of grain: wheat, barley, oats, rapeseed, soy and more.

In dry conditions, these light grains are no problem - but when it's wet or cold, or with a heavy crop like corn, the complications multiply. Drums can get jammed. They can take a long time to clear. This can even result in permanent damage.

In an ideal world, you'd be able to anticipate a jam, and prevent it from ever happening. VPG Force Sensors created a sensor that does exactly that - by sensing the tension on the belt and alerting the operator when it reaches a dangerous level.

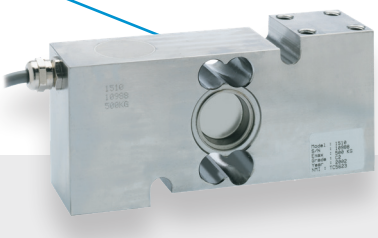


Model 3510 Shear Beam

VPG Force Sensors engineers developed a similar system using 4 shear beam of load cells installed under the storage point of the tank.

VPG Force Sensors also designed a bespoke sensor to measure the impact of grain as it flows into the collection hopper. The impact is directly proportional to the amount of grain collected, making it possible to calculate the yield for each square meter of land.

Model 1510 Single-Point Load Cell



The sensor is mounted adjacent to the main drive belt at the side of the combine, and the loading end is attached to a roller. The drive belt connects the driving pulley to a "driven pulley" that operates the main rotating threshing drum. Then, if the torque on the driven pulley starts to increase, the tension in the belt increases and presses against the load cell.

A PID Controller (Proportional, Integral, Derivative) measures the change, and the rate of change, and either slows down the drive or stops it completely. The result: no drum jamming. The driver has time to clear the potential blockage and quickly get back to work.

Soil preparation/spreader

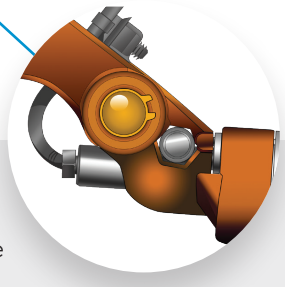
Putting seeds in precisely the right places

Along with the fertilizer spreader, the planter implement unit is one of the most important tools in modern farming. It enables farmers to deal with some key impacts of climate change: unpredictable weather and shorter harvest seasons. With bigger and wider machines, planting and seeding times can be dramatically reduced.

Accurate measurements of soil depth and seed spacing are essential in this process, especially with the larger machines that cover more ground. Knowing the depth margin of the cut from the gauge wheel is crucial: maintaining the right depth not only ensures the seeds will get the required nutrients, but also that they won't be exposed to unpredictable factors such as weather or birds.

To address this issue, VPG Force Sensors designed a force sensor that can be used in this application.

By installing force sensors on several row arms of the planter implement, the machine can accurately measure the force of each arm during the soil preparation process so seeds can smoothly, and accurately, be placed at just the right depth. Depending on the nature of the output of the sensor, the operator can adjust the depth of the gauge wheel, or this can be done automatically.



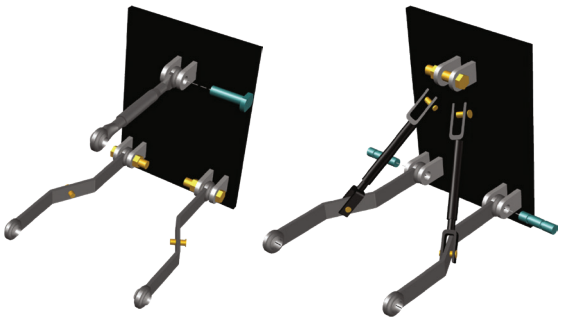
Custom sensor
downforce sensor

Let us know how a system like this could enhance your equipment - and how VPG Force Sensors can work with you to achieve the best solution for your application needs.

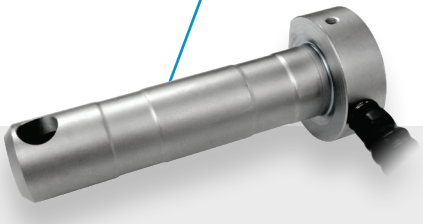
Draft pins rear hitch

Keeping an eye on critical pressure points

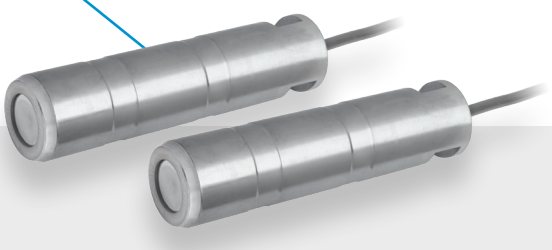
To ensure good yields, both tractor and implement tools must work at top efficiency. This involves maintaining a consistent depth in the soil as the plow moves through the field. Hitch sensors - on either the movable upper arm that the implement attaches to, or the pair of lower arms that handle lifting, lowering and tilting - measure the stress levels. If the plow gets too deep, the stress increases, the operator is alerted and the arm can be raised to the proper depth.



Model 5117
Draft Pin



Model 5113
Draft Pin



VPG Force Sensors offers three standard and custom sizes of draft pins to provide a complete solution. With the system in place, the operator can see the actual force measurement from the draft pin and the risk of overloads, downtime and accidents is greatly reduced.

Fertilizer spreader

Making fertilizers and investments go further

It can be difficult to balance rising pressure to limit capital costs with the need to keep market prices low. As fertilizer prices have risen, farmers need equipment that's both cost effective and capable of maximizing yields.

That's why VPG Force Sensors manufactures custom sensors that provide operators with greater control and accuracy, and eliminate redundancy. Dosing speed can be easily adjusted based on the weight of the fertilizer storage bin and the speed of the tractor. The result is a more efficient way to cover a wider area with a specific amount of fertilizer.

Model 3410-ES
EDOC coated

The bin sits on top of a custom shear beam load cell, which is mounted on the chassis of the fertilizer spreader structure.

VPG Force Sensors develops and manufactures the world's most advanced force measurement sensors and solutions, delivering optimal performance and empowering tomorrow's innovations. With our renowned brands, we offer the largest range of load cells, weighing instruments and accessories available from a single-source supplier. Chosen for their high accuracy, uncompromising quality and long-lasting reliability, our products are implemented in millions of machines, devices and systems around the world. Due to our large manufacturing capacity, fast turnaround on orders, high product quality and competitive cost structure, we are a leading load cell supplier to many industries and markets. VPG Force Sensors is part of VPG (Vishay Precision Group), a global leader in precision measurement sensing technologies.

SENSORTRONICS | TEDEA-HUNTLEIGH | Revere Transducers | CELTRON

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