Best Practice Guide:
Vehicle Weighing Series

Top 4 Environmental Threats

How to Protect Your Weighbridge from Downtime

METTLER TOLEDO

Introduction

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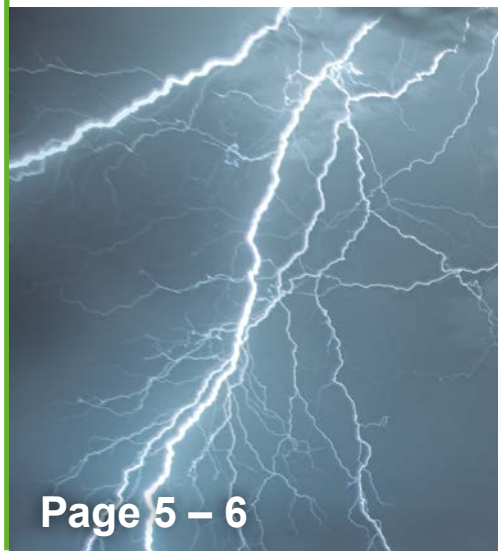
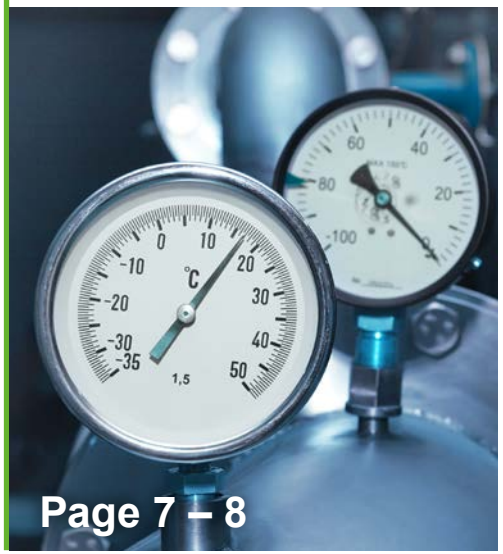
Vehicle scales take a beating from their environment and their application. Traditional analog load cell systems are vulnerable to the effects of their surroundings. Here we will look at the top 4 environmental factors that can affect an analog powered weighbridge and how POWERCELL® technology can help you avoid the headaches that come with each.

Water 1

Lightning 2



Temperature Fluctuation 3



Physical Damage 4

Sensitive Electronics Exposed

Traditionally located outside, it is nearly impossible to keep a truck scale dry 100% of the time. Even if an operation is located in a typically dry climate, recommended preventive care includes scale cleaning with a power washer.

- Joined together with a series of cables and junction boxes
- Only serviceable by opening the junction box, exposing sensitive electronics to the elements and rusting from the inside
- Should avoid: rain, flooding, morning dew and power washing
- Fixing the problem requires tedious service hours or a completely new part

1. Water: Powercell® Technology

Protective Design

The best option as a scale owner or operator is to choose a technology that can stand up to water.

- Utilizing a daisy chain connection allows the POWERCELL® PDX® system to eliminate the need for vulnerable junction boxes
- Glass-to-metal connectors on all stainless-steel load cells makes for a water-tight seal
- IP68 and IP69K submersion ratings, meaning the entire load-cell system can still operate even when fully submerged in water

Watch the Video:
www.mt.com/NoJunctionBoxes

Basic Protection

With over 300 million lightning strikes per year worldwide – chances are your truck scale will be in the path of at least one during its lifetime. Depending on how your load-cell system stands up to lightning, your business could experience severe negative effects from a strike.

- Typically equipped with a grounding system in an attempt to redirect a strike, active redirection is not provided
- If a load cell does take a direct strike, it can kill that entire set of load cells
- At up to $2,000 per load cell, it can be expensive to replace an entire set
- Another cost to consider is the cost of lost business due to downtime. How much would your business lose per day while waiting for a technician to replace any damaged load cells?

2. Lightning: Powercell® Technology

Advanced Protection

When properly protected from lightning, you don't need to worry about every storm causing truck scale downtime.

- Tested at an independent laboratory, POWERCELL® PDX® load cells are rated to handle strikes 3 times the strength of an average strike
- Designed to withstand both direct and indirect strikes, cables help to protect and redirect surges away from sensitive electronics
- In the rare case of load-cell failure, that single cell can be replaced
- StrikeShield™ technology cuts off communication with the terminal in the event of a strike, saving the terminal from any damage

Watch the Video:
www.mt.com/LightningTest

Risk of Inaccuracy

Just like temperature can affect the performance of your other electronics, it also affects the performance of your truck scale. When the temperature rises or falls, the sensitive components inside the load-cell system can be slowed, causing a shift in accuracy.

- Provides a minimal amount of compensation or adjustment to temperature changes
- Compensated only to be within specification – not necessarily within true accuracy
- With no way for an analog load cell to alert when a scales accuracy has drifted, a business could be operating on an inaccurate scale for weeks without knowing

3. Temperature Fluctuation: Powercell® Technology

Active Compensation

With active compensation built in to every load cell, POWERCELL® PDX® helps to combat the effects of changing temperature. Providing industry leading accuracy in any climate.

- Patented METTLER TOLEDO algorithms
- Compensated to nearly perfect readability in any temperature
- Combats effects of temperature by download-ing parameters to the cell, meaning they don‘t change their value with temperature over time

Watch the Video:
www.mt.com/PDXhowitsmade

Costly Replacement Parts

Semi-trucks, tractor trailers, maintenance equipment – however your bulk material operation functions, there is no doubt that it includes some heavy-duty machinery. With these environments comes the risk for damage to surrounding equipment, including the truck scale.

- Cables permanently affixed to the load cell, meaning both load cell and cable must be replaced in the case of damage
- When damage occurs, troubleshooting is extremely time-consuming
- Technician must check each cell to fi nd the damaged cell
- Cost of replacement parts and service fees add up quickly

4. Physical Damage: Powercell® Technology

Improved Design

When a load cell or cable is damaged, the smart design of POWERCELL PDX ensures your business is operational faster.

- Breach-detection technology alerts the scale owner directly to the load cell that needs attention at the first sign of damage or tampering
- Quick disconnect cables allow for damaged cables to be replaced rather than the entire cell, a cost effective solution
- When replacing a cell is necessary, detachable cables make the replacement process is much easier than replacing an analog load cell with attached cables
- Highly durable stainless-steel sheathing and load cell canister ensures protection

Watch the Video:
www.mt.com/Veh_Videos

Conclusion

For true protection from the elements, the choice is clear. POWERCELL® PDX® load cells have solved the most common causes of truck scale downtime – leaving you to run your business problem free.

Eliminating the Problem:

- **No Junction Box**
- **Advanced Lightning Protection**
- **Active Compensation for Improved Accuracy**
- **Breach-Detection Technology**

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www.mt.com/TruckScaleGuide

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Industrial Division
Local contact: www.mt.com/contacts

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