

TECHNICAL INFORMATION

SMARTTRACK IMPACT SENSOR SEVERITY RATING GUIDE

Overview

RCT is transitioning away from using the engineering unit of 'G' (G force) to a 'severity rating' that would be easier to explain and understand.

The severity rating has been calibrated to align with the old engineering value of G to provide some correlation for long-term SmarTrack® users. As we update our SmarTrack website, reports, and documentation, the unit 'G' will be removed.

Acceleration and Impacts

Acceleration

Acceleration is the rate of change of velocity and results in a force exerted upon an object as it changes direction or speed. Any change in direction creates some amount of acceleration.

Impact

An impact is a quick rate of change in velocity. These are termed 'impacts' since the main purpose of the sensor in SmarTrack is to determine if a machine has 'impacted' anything.

Impacts are recorded and classified by SmarTrack as a 'severity rating'. Previously, these were classified as an engineering unit of 'G' (G Force), but has since changed to a severity rating which is easier to explain and understand.

As we update our SmarTrack website, reports, and documentation, the unit 'G' will be removed.

Reporting

SmarTrack measures four directions of acceleration; these include left, right, forward, and reverse. The system reports the resultant magnitude in the operator or machine reports listed as impacts. The SmarTrack system reports this value and classifies it into an 'impact severity' rating—this value is unitless and directionless.

Examples of impacts that should not result in a recorded or classified event would include the following:

- If a machine side-swipes something and paint is scratched, yet the machine velocity did not change.
- If the tynes of a forklift puncture or rip product packaging.
- If the machine has travelled over a gentle bump, for example, traversing a speed hump at a safe speed.

When determining the potential severity of impact exceptions at your site there are several factors to consider that may influence impact events. These factors include the following:

1. Machine Type and Size

Wheel size, tyre type (air filled and solids), suspension type, and load carrying configuration.

2. Surface Conditions

Sharp speed humps, gutters, potholes, ridges between floor surfaces, and loading and unloading ramps.

3. Machine Speed(s)

Braking efficiency and acceleration performance—note that a braking event, to the sensor, is the same as an impact since it measures the change in velocity.

4. Load Types

Load weight, load stability, load type, and load height (total load mass).

Determining the Impact Severity Threshold

RCT recommends that you conduct a site assessment to determine the threshold or setpoint for determining impact severity that you believe will require investigation.

Examples of site tests could include the following.

■ Test 1

Choose a popular model/type of forklift used on site and conduct an unladen driving test over all possible routes, making sure to include speed humps, gutters, potholes, ridges between floor surfaces, and loading and unloading ramps. View the trip report via SmarTrack® to review the frequency and severity of the impacts reported.

■ Test 2

Using the same model/type of forklift used on site, conduct an unladen driving test over all the same route and include sessions of semi-harsh braking, semi-harsh steering, and acceleration. View the trip report via SmarTrack to review the frequency and severity of the impacts reported.

■ Test 3

Using the same model/type of forklift used on site, repeat both tests 1 and 2 but this time with an average load. View the trip report via SmarTrack to review the frequency and severity of the impacts reported.

Compare the various test results to determine the best threshold or setpoint for impacts. It could then be considered reasonable that any impact exception reading recorded above the agreed threshold or setpoint would require investigation to determine cause and report damage.

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