straightpoint

USER GUIDE

WCOGS
Wireless Centre of Gravity
Software Version 2.21

SU3559 Issue 04 Oct 2016

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Date of Purchase:	

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Marks & Symbols

The following symbols may be used within this user guide.

		Indicates a note or where attention is required
	IMPORTANT	Indicates an important step, instruction or information necessary for the proper functioning of the software or loadcell monitoring.
	CAUTION	Indicates a potentially hazardous situation that if not followed or avoided may result in personal injury or damage to property.

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Contents

1. Introduction 4

Intended Use 4
Additional Required Items & Documents 4
Computer System Requirements 4

2. System Overview 5

General 5
WCOGS Software 5

3. Installation & Set Up 6

Installation 6
Set Up 7
Transceiver Alignment 10

4. Using the System 11

Preparing for Test 11
Realtime Weight & Centre of Gravity 12
Graphical View 14
Weighing Report 15
Test Completion 16

1. Introduction

Intended Use

The Straightpoint Wireless Centre of Gravity Software (WCOGS) is intended to be used by professionals in the heavy lifting and weighing industry for the determination the centre of gravity of large and heavy structures using multi-arrays of compression loadcells.

The software and required drivers is available as a download, or provided on a USB memory stick.

The software licence is free.

Additional Required Items & Documents

- Straightpoint SW-USBBSE Transceiver;
- Straightpoint WNI Series Compression Loadcells (minimum 3; maximum 36);
- Loadcell User Guide SU3442;
- Desktop computer/laptop/tablet/other Windows® device.

Computer System Requirements

- Intel® Core™ i3 processor with minimum 2 GB RAM;
- Windows® XP, Windows® Vista, Windows® 7, Windows® 8, Windows® 9 or Windows® 10 (must have English language option selected);
- Spare USB port (not hub).

Caution

Ensure Straightpoint wireless compression loadcells are handled and used in accordance with the safety instructions within the Loadcell User Guide SU3342. This is supplied with the loadcell.

Other equipment used in conjunction with Straightpoint loadcells, such as jacks, hydraulic cylinders, chains, strops, lifting frames, and other material handling equipment, must be inspected, checked, handled and used in accordance the appropriate manufacturer/supplier information and/or with all pertinent regulatory requirements and Industry Standards/Codes of Practice.

2. System Overview

General

When moving large industrial items such as absorbers, generators, turbines, reactors, boilers, towers, locomotives, boats, military equipment or offshore industry parts such as oil rigs and production platforms, heavy lift companies very often need to be able to quickly report the weight and centre of gravity of such loads.

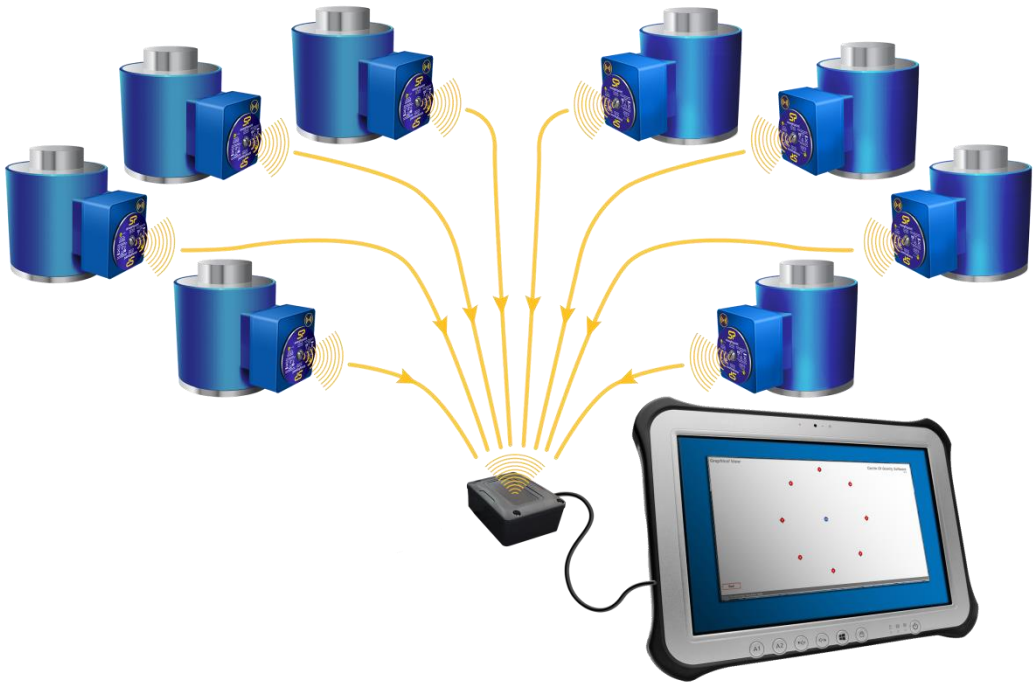
The Straightpoint wireless centre of gravity system uses telemetry compression loadcells that, in conjunction with the WCOGS software, allows the monitoring of individual load points in real-time, and the determination of the dynamic centre of gravity.

The system can weigh and calculate centre of gravity of objects and structures weighing anywhere from 20t - 4000t.

SW-WCOGS Software

Features;

- 100% Wireless;
- Simple and quick installation;
- User friendly interface;
- Between 3-36 loadcells of the same capacity can be used at any one time;
- ISO19901 compliant;
- 500m range;
- On screen, real time centre of gravity view;
- Simultaneous data logging and viewing;
- Three weighing's per report with averages;
- Plot loadcell positioning using measurements or GPS co-ordinates;
- Extra fields for operator, client, wind speed and temperature available for reporting;
- Full mass, load and centre of gravity analysis reporting and printing;
- Full range of accessories for wired, wireless PC and PLC integration via analogue or serial output.



3. Installation & Set Up

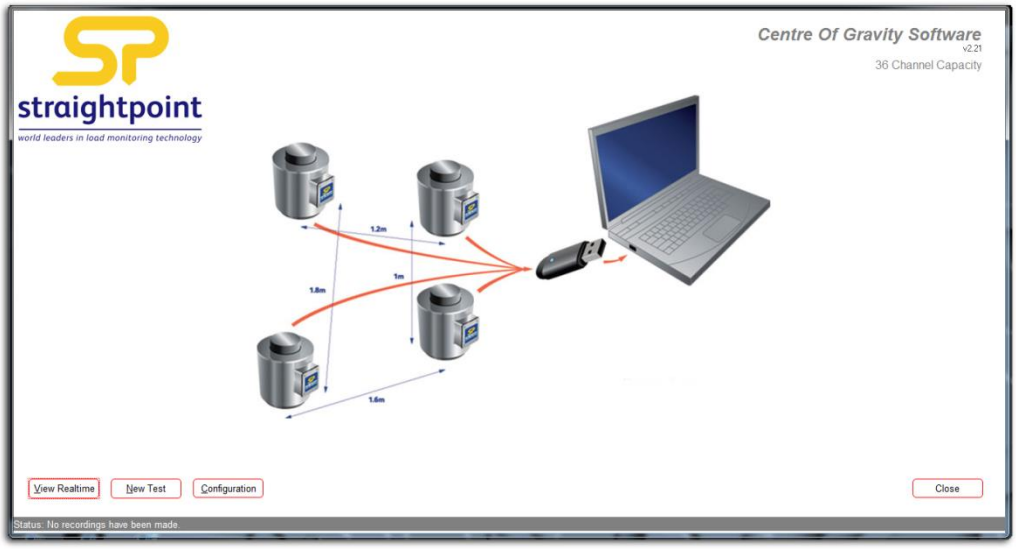
Installation

1. Insert the USB key in to a spare USB port on your computer/laptop/tablet/device (do not use a hub) and follow the on-screen instructions to install the software.
2. Remove the USB Key.
3. Insert the SW-USBBSE Transceiver into the USB port, and let the drivers install.

Important

To ensure optimum reception of the signal transmitted from the loadcell(s), see the end of this section 3 for mounting and alignment guidance.

4. Run the software from the desktop or start menu icon and you will be presented with the screen below.

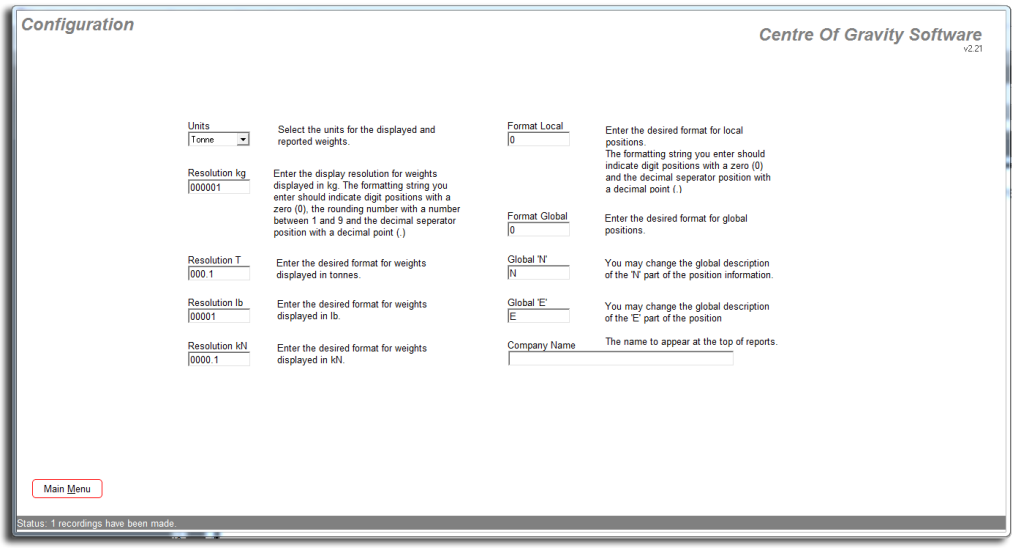


Set Up

To set up load cells for the first time,

1. Click on the ‘configuration’ button

This will reveal the following screen



2. Enter configuration details.

Units – select the units required for weighing from the drop-down list.

Format kg – if using kg units, enter weighing increments e.g. if weighing in 50kg units, enter ‘50’.

Format T – if using tonne units, enter weighing increments e.g. if weighing in 0.05t increments, enter ‘0.05’.

Format lbs – if using lb units, enter weighing increments e.g. if weighing in 100lb increments, enter ‘100’.

Format kN - if using kN units, enter weighing increments e.g. if weighing in 0.5kN increments, enter ‘0.50’.

Format Local – set this if measuring and recording measurements between the loadcells locally rather than using GPS co-ordinates, e.g. if using a tape measure. And measuring in metres to the nearest 10mm, enter format as ‘0.01’.

Format Global – set this if measuring and recording measurements between the loadcells using GPS co-ordinates. If GPS co-ordinates are to 4 decimal places, enter format as ‘0.0001’.

Global N – this would normally be ‘North’, but change if required.

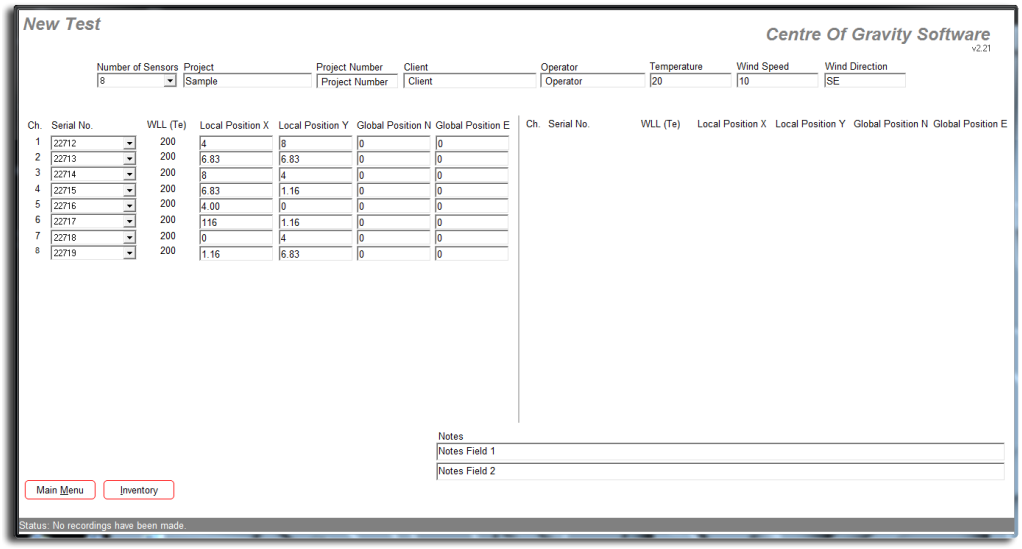
Global E – this would normally be ‘East’, but change if required.

Company Name – Enter your company name.

3. When complete click ‘Main Menu’.

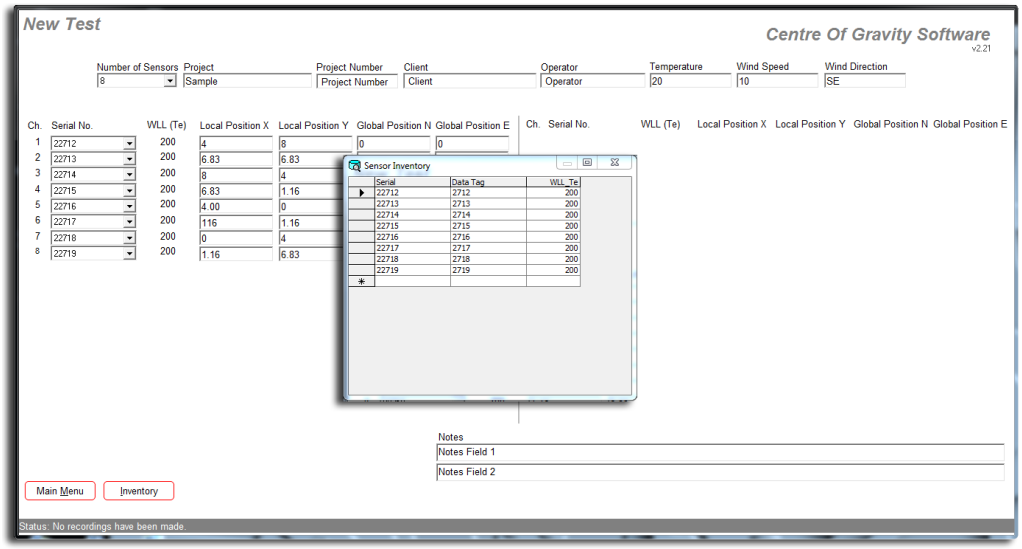
4. Now set up the loadcells to be used. Click on the ‘New Test’ button.

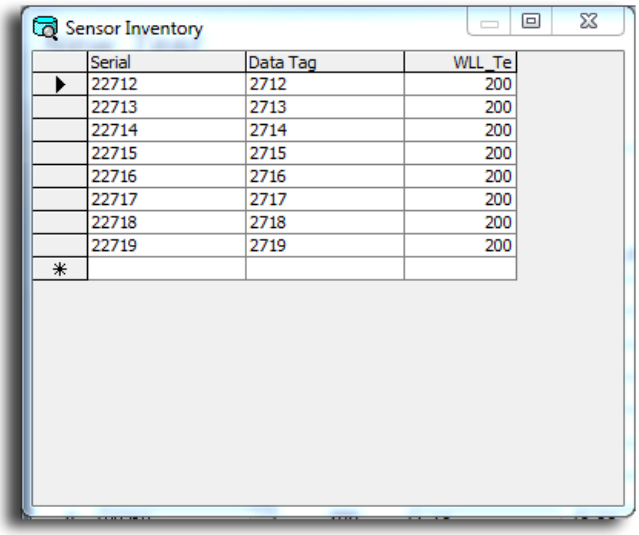
This will reveal the following screen:



5. Add the loadcells to be used. Click on the ‘Inventory’ button.

This will reveal the following pop-up screen.





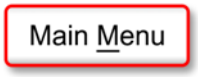
6. For each loadcell enter:

Serial Number – this is engraved on the loadcell, and on the calibration sticker.

Data Tag – This is a unique code for the loadcell, and is always the last four digits of the loadcell serial number. This is 2713 in the above image.

Range – Enter the capacity of the loadcell. This can be found on the loadcell, and also on the calibration certificate.

7. Once all of the loadcells have been added, close the screen by clicking ‘X’ in the top right hand corner. This will return you to the ‘New Test’.
8. Click on the ‘Main Menu’ button to return to the Main Menu. This will allow the system to update the inventory database.



9. The system is now ready to be used and testing can begin. Before proceeding with testing, ensure that the loadcells and transceiver are aligned for optimum performance as detailed in the next section.

Transceiver Alignment

To achieve optimum reception of transmitted microwave signals from the loadcell(s), consideration should be given to the operating environment and alignment of the USBBE receiving module.

The following guidelines and tips will ensure best possible reception and range.

To achieve the best possible signal reception, the USBBE should be mounted with the long side of the module vertical, and the top face pointing towards the loadcell(s). (Fig.1 and Fig. 2)

Try to ensure there is line-of-sight between the loadcell(s) and the USBBE receiver with no obstructions in the path, as these will reduce the range and may possibly degrade performance of radio link due to reflected indirect signals reaching the USBBE receiver. Obstructions can, in the worst case, result in complete loss of the radio link. (Fig. 3)

Wherever practicable, try to avoid having structures or objects in the immediate vicinity of the transmitter and receiver antenna fields as these may distort the field patterns and adversely affect the range and quality of the radio link. Ideally, objects and structures should be at least one metre away from the antennae.

Fig. 1
Vertical mounting of USBBE
for optimum signal reception.

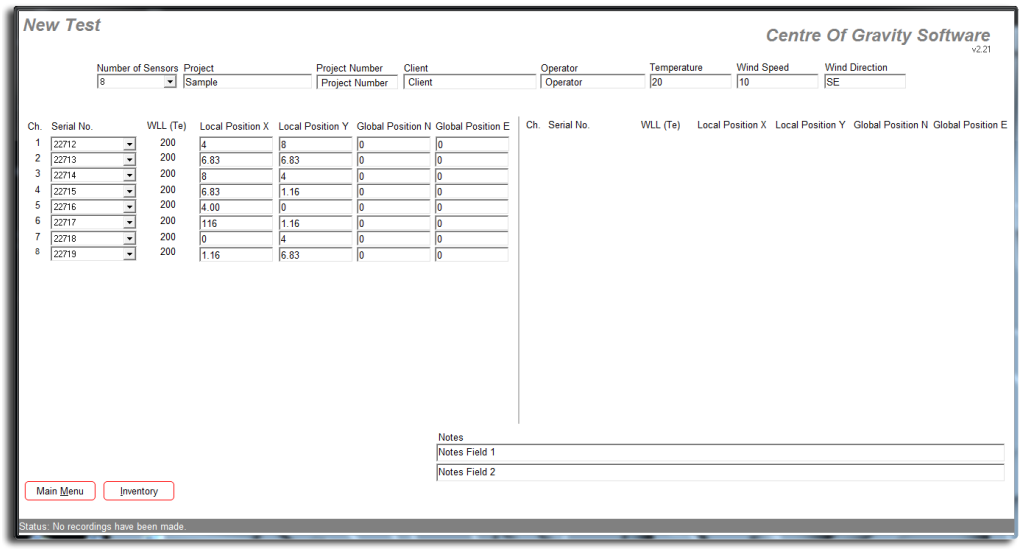
Fig. 2
Antenna receiving field

Fig. 3
Establishing an obstacle free line-of-sight path between the USBBE receiver and the loadcell transmitter will provide best quality radio link and greatest range.

4. Using the System

Preparing for Test

1. Once all of the loadcells have been added to the inventory (see section Installation & Setup), bring up the 'New Test' screen, either from the Main Menu.



2. Enter basic test information.

Number or Sensors – enter number of loadcells to be used for the test.

Project – enter project name if and as required.

Project Number – enter project or job number if and as required.

Client – enter client name if and as required.

Operator– enter operator name if and as required.

Temperature – enter ambient temperature of test location if and as required.

Wind Speed – enter wind speed at test site if and as required.

3. From the drop-down boxes, choose the loadcells or 'sensor number' to be used for the test. The drop down boxes reveal the loadcells entered into the inventory.

4. Enter the x and y co-ordinates for the position of the loadcells in either local or global measurements. In the sample screenshot, eight loadcells are arranged in a circle of eight metres diameter with the first loadcell at x= 4,y=0. See section Graphical View.

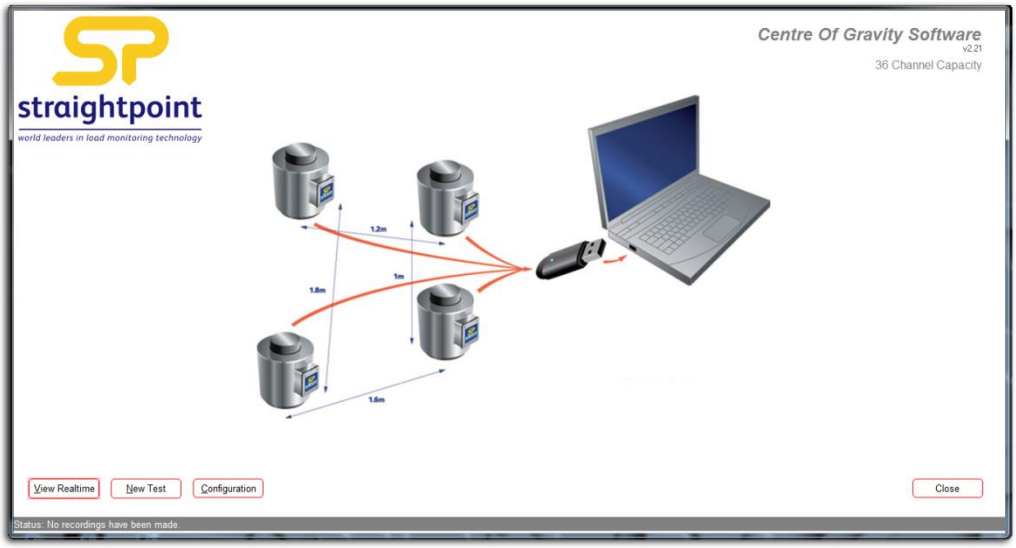
5. As details of loadcells and positions are added, the number of channels will automatically update to the number being used for the test, up to the maximum of 36.

6. Notes fields are provided for any adding any relevant information concerning the test or loadcells. These notes will appear on the printed report.

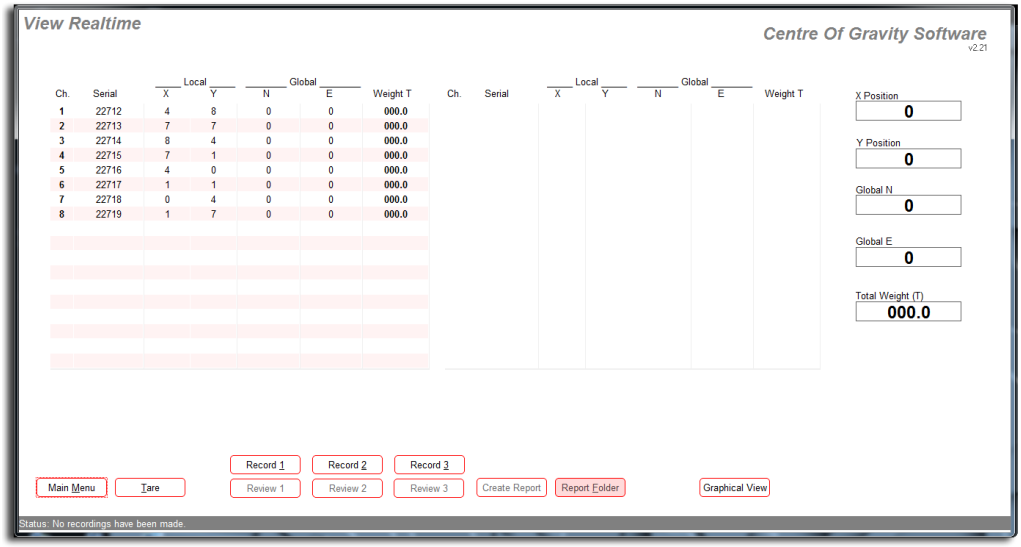
7. Once complete, click 'Main Menu' to proceed with testing.

Realtime Weight & Centre of Gravity

1. In the main screen, click the ‘View Realtime’ button’.



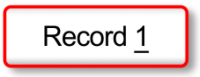
2. This screen will be presented, and show each of the loadcells by serial number, their local or global position, and the load on each load cell in the chosen units.



3. The readings on the right side of the screen will show the centre of gravity co-ordinates, locally and globally. At the bottom, the total weight of the item under test will be displayed.

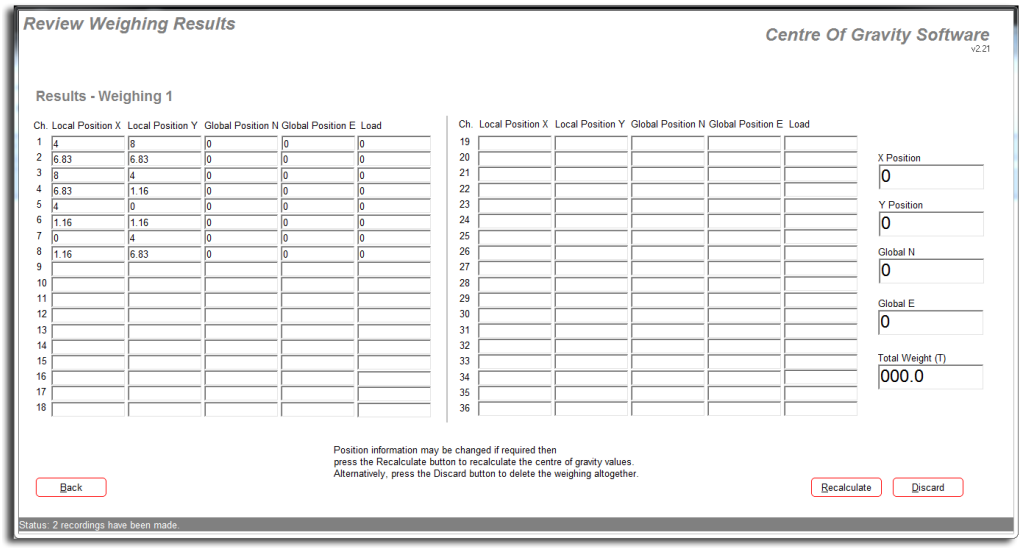
   NOTE: No weights have been entered for the purposes of the sample screen shot.

4. Up to three weighings can be recorded by clicking on the ‘Record’ buttons



5. Each record can be reviewed before proceeding with report by clicking on the ‘Review’ button.

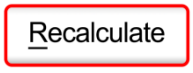
6. The Review Weighing Results screen will show the weighing results of each of the recorded weighings as shown below:



7. Click on the ‘Back’ button to return to the ‘View Realtime’ screen.

8. If for any reason the review yields unsatisfactory results, the readings can be discarded by clicking on the ‘Discard’ button. New readings can then be taken by returning to the ‘View Realtime’ screen.

9. If any of the position values (X, Y, N, or E) are incorrect or need to be changed, they may be overtyped. Then click on the ‘Recalculate’ button to refresh the screen with the recalculated centre of gravity.

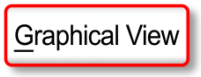


10. Click on the ‘Back’ button to return to the ‘View Realtime’ screen.

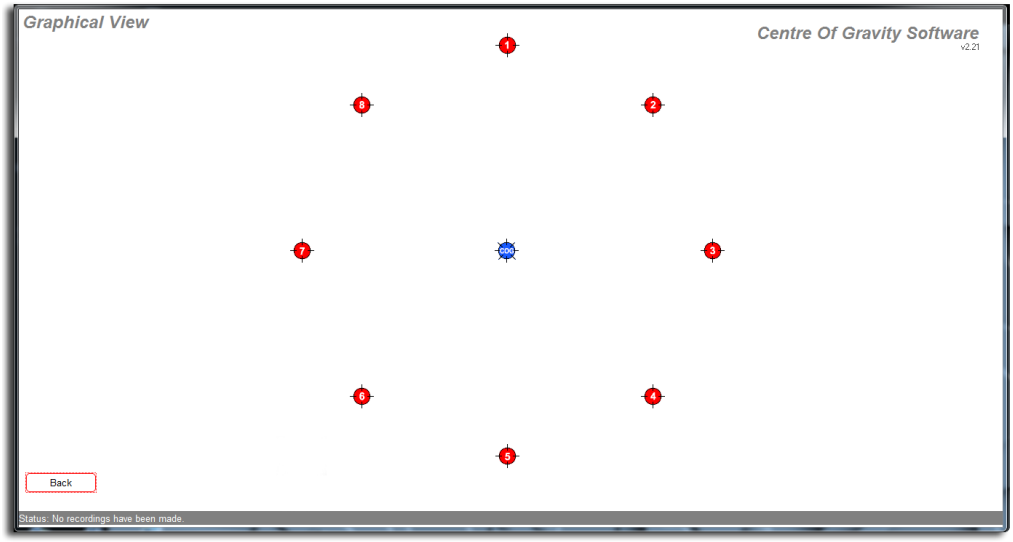
Graphical View

1. Once the load has stabilized on the loadcells, the live centre of gravity can be viewed graphically. This is a useful visual realtime check of the centre of gravity in relation to the loadcells

2. To do this, click on the ‘Graphical View’ button.

   This will reveal the screen shown below, and will show all of the loadcells being employed, and the position of the centre of gravity (shows the eight loadcells used in the example)



3. To revert to viewing realtime data, click the ‘Back‘ button.

   This will return you to the View Realtime screen.

Weighing Report

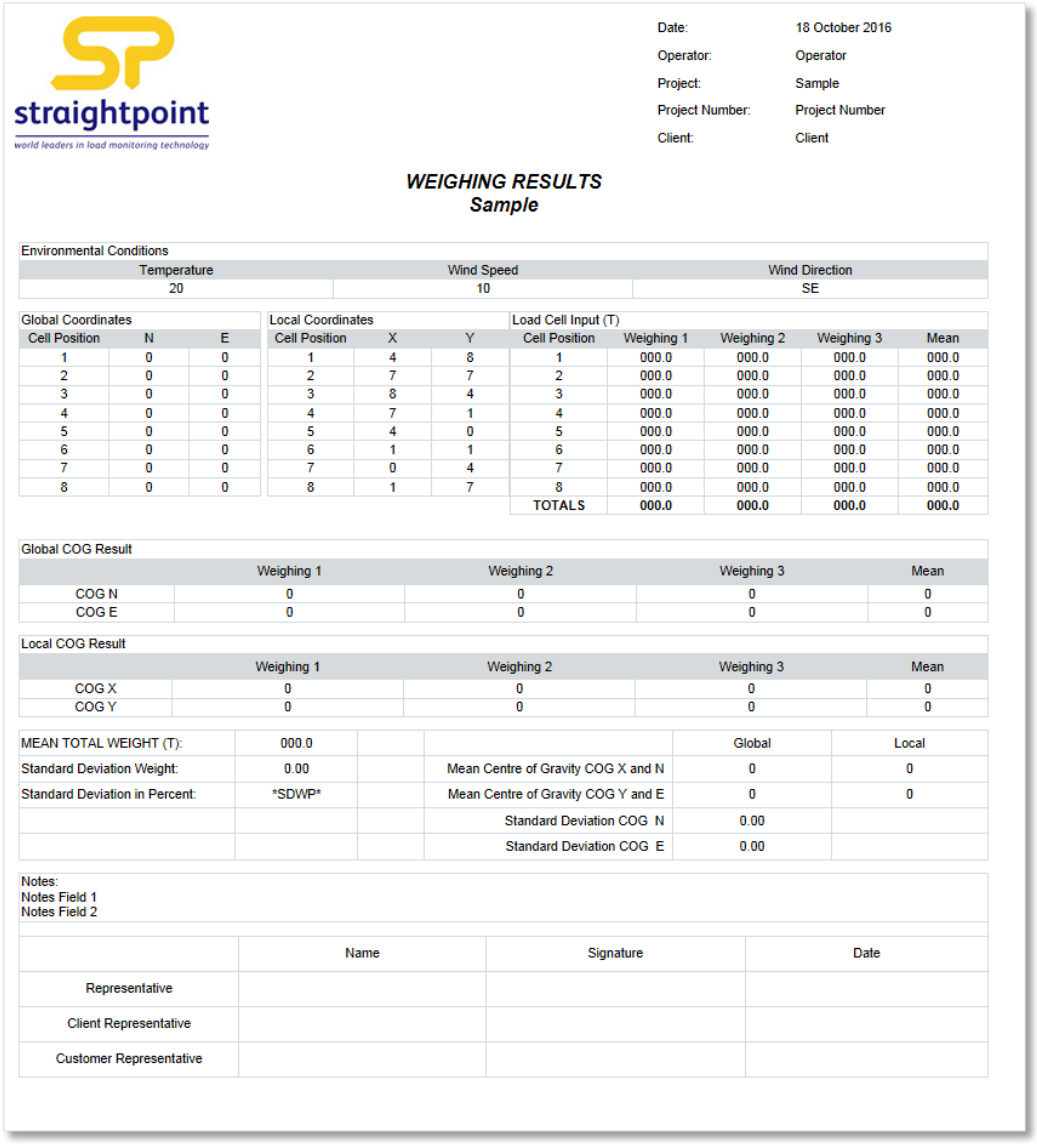
1. Once three satisfactory weighings have been taken and recorded, a weighing Report can be generated from the View Realtime Screen by clicking on the ‘Create Report’ button.

Create Report

Important

A minimum of three readings need to be taken to generate the report. The status bar at the bottom of the screen will inform you how many recordings have been made. A Report cannot be generated until the three readings have been recorded

The report will appear in a separate window.



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world leaders in load monitoring technology

Date: 18 October 2016
Operator: Operator
Project: Sample
Project Number: Project Number
Client: Client

WEIGHING RESULTS
Sample

Environmental Conditions

Temperature	Wind Speed	Wind Direction
20	10	SE

Global Coordinates			Local Coordinates			Load Cell Input (T)				
Cell Position	N	E	Cell Position	X	Y	Cell Position	Weighing 1	Weighing 2	Weighing 3	Mean
1	0	0	1	4	8	1	000.0	000.0	000.0	000.0
2	0	0	2	7	7	2	000.0	000.0	000.0	000.0
3	0	0	3	8	4	3	000.0	000.0	000.0	000.0
4	0	0	4	7	1	4	000.0	000.0	000.0	000.0
5	0	0	5	4	0	5	000.0	000.0	000.0	000.0
6	0	0	6	1	1	6	000.0	000.0	000.0	000.0
7	0	0	7	0	4	7	000.0	000.0	000.0	000.0
8	0	0	8	1	7	8	000.0	000.0	000.0	000.0
						TOTALS	**000.0**	**000.0**	**000.0**	**000.0**

Global COG Result

	Weighing 1	Weighing 2	Weighing 3	Mean
COG N	0	0	0	0
COG E	0	0	0	0

Local COG Result

	Weighing 1	Weighing 2	Weighing 3	Mean
COG X	0	0	0	0
COG Y	0	0	0	0

				Global	Local
MEAN TOTAL WEIGHT (T):	000.0				
Standard Deviation Weight:	0.00		Mean Centre of Gravity COG X and N	0	0
Standard Deviation in Percent:	*SDWP*		Mean Centre of Gravity COG Y and E	0	0
			Standard Deviation COG N	0.00	
			Standard Deviation COG E	0.00	

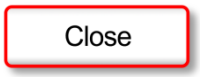
Notes:
Notes Field 1
Notes Field 2

	Name	Signature	Date
Representative			
Client Representative			
Customer Representative			

2. All Reports are automatically saved and can be accessed by clicking on the ‘Report Folder” button.

3. All reports generated will be listed in the window.
4. Open the last, or required report to view and print if required.

Test Completion

1. To finish the test, click on the ‘Main Menu’ button.

2. Close the program by clicking on the ‘Close’ button.