

Automatic Bulk Weighing Scale Systems

Performance you can rely on:

- Fastest and most accurate scale available
- Top quality components ensure most reliable scale
- Lowest height in the industry reduces leg costs
- Easy installation - fully assembled and tested before shipment
- Conservative design guarantees rated throughput
- And it's built like a tank!

- | | |
|-------------|---------------|
| • Grain | • Milling |
| • Salt | • Animal Feed |
| • Aggregate | • Bio-fuels |
| • Minerals | • Cement |



A complete, engineered solution for all of your bulk weighing needs!



One company, one solution

When you purchase a CompuWeigh Bulk Weighing System, you are getting the unique benefit of a bulk scale and scale control system that are configured to work together from day one to provide the fastest, most accurate system on the market. What this means for you is no questioning whether the scale components and control system features will support each other and what parts from each are necessary to make the system operate as you expect. You can depend on CompuWeigh for this engineering and system design. After all, as you will learn nobody knows bulk weigh scales and control systems better than we do.

Experience, Design and Engineering

CompuWeigh is one of the largest suppliers of bulk weighing scales and control systems in the industry. We were incorporated in 1978 when we introduced the first fully enclosed bulk weigher that features open top weigh hoppers and lower garners, eliminating complications of intervening and dust curtains. Since then, CompuWeigh has remained a dominant player in bulk weighing systems.

Over 90% of all export terminals in the United States and over 60% grain weighed in this country has passed through a CompuWeigh system. The reason for this is really quite simple. ***Our equipment is accurate, dependable and easy to use.*** All designs and modifications are provided on Autodesk Inventor and drawings are available with a stamped structural engineer certification to ensure they meet both your needs and the seismic zone in which the scale will be located.

Whether your weighting needs are for agriculture, bulk materials such as sand or any other bulk material, we likely have supplied a solution and can provide the consultation to help you accomplish your goals.

Twelve features that make a CompuWeigh system unique:

1. Our systems are the most accurate
2. We monitor flow rate
3. We use a trim limit switch
4. We use a mid-level sensor in the upper garner
5. Our scales are faster than the competition
6. No mechanical level switches
7. We utilize a lower garner empty level sensor
8. Superior gate design
9. Lowest height scales on the market
10. Fully enclosed design
11. Superior load cell mounting design
12. Built to last

Feature One:

Our systems are the most accurate

Accuracy in a bulk scale is all about being able to exactly control when the upper garner discharge gates close on the last draft of an order. This is not as easy as it sounds because:

- there may be as much as 3,000 lbs. a second flowing through the feed gates and we want to be within +/- 10 lbs. We need to control the gates to within 1/300th of a second and since these gates can be quite large at 2' by 5' wide, this is quite an accomplishment.

- the flow rate through the feed gates changes dramatically during an order depending upon whether the upper garner has material in it or is empty, in which case it is running off the supply from the leg.
- the time it takes to close the gates varies with the change in ambient temperature and with a hydraulic system, on how warm the hydraulic oil is.

Feature Two:

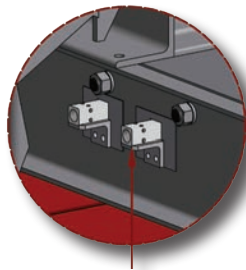
We monitor flow rate

Other suppliers assume flow rate and gate closing times are static values which results in lower accuracy. We understand if the upper garner is full of product the flow rate through the Upper Garner Feed Gate is going to be considerably faster than if the upper garner is only partially full. We are the only company that can evaluate the flow rate separately from the gate closing time, even as our scale controller is running through its program at over 5,000 times a second!

Feature Three:

We use a trim limit switch

The second way that we get better accuracy is that we add a trim limit switch on the upper garner discharge gate. This is only used on the last draft of an order and when the scale is very close to reaching the order weight, the feed gates are instructed to move to this position. The flow will momentarily slow to about ¼ speed and we are then able to precisely close the gate to finish at the order weight.



Trim Limit Switch

Other suppliers will deliberately fully close the gate prematurely, evaluate how short they are from the target weight and then reference a look-up table to tell them how long they should jog the gate for. This is imprecise because it does not take into account whether the upper garner is full or empty or how quickly the gates are operating. The net result is less accuracy and no time savings.

Feature Four:

We use a mid-level sensor

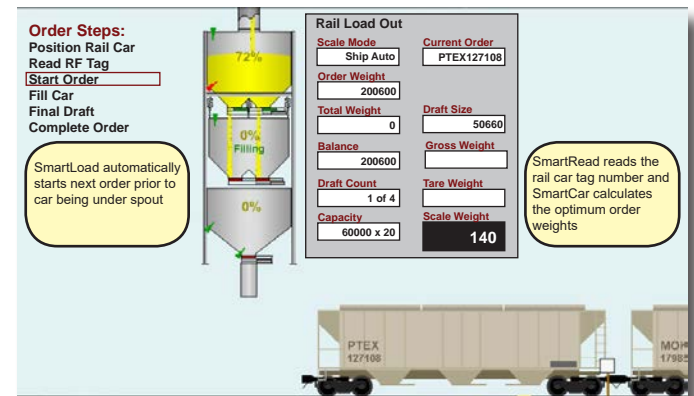
The third reason that our scales are more accurate is that we can use a mid-level sensor in our upper garner. We will not open the weigh hopper fill gate until this sensor is covered indicating that we have at least 90% of a draft in the upper garner. This ensures that we never experience that dramatic reduction in flow rate that happens when the upper garner goes empty that would interfere with our

precise monitoring of flow. The other benefit of this level switch is that it prevents product from being damaged by dropping all the way from the top of the upper garner down to the gate in the weigh hopper, a distance that can be over 20 feet.

Feature Five:

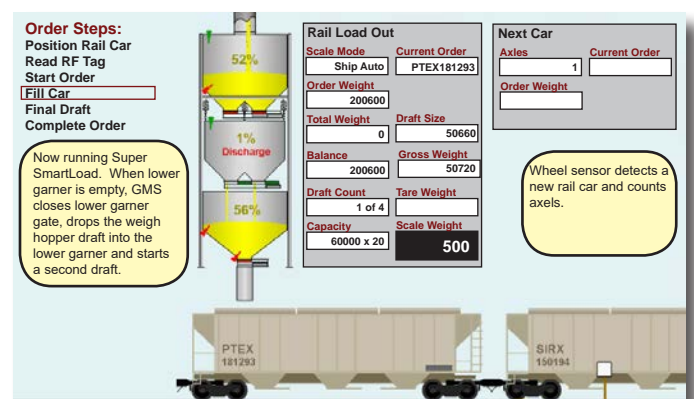
Our scales are faster than the competition

Available only with our CD-4000 and GMS-4000 control systems, **SmartLoad** enables the scale to automatically start the filling process for the next car by holding a full draft in the weigh hopper while the next car is being moved into position.



SmartLoad

With **Super SmartLoad**, if you have a lower garner gate and lower garner empty level sensor, you can also weigh and store a full draft in the lower garner in addition to the weigh hopper. Combined with **SmartLoad**, **Super SmartLoad** enables you to run your supply equipment approximately 50 seconds longer than with competitive systems due to the increased storage capacity. This can potentially save an hour and a half on a unit train.



Super SmartLoad

To learn more about SmartLoad and Super SmartLoad, go to www.compuweigh.com and select Demo Movies from the home page.

Feature Six:

No mechanical level switches

Legal for trade bulk weighing requires at least three level switches to ensure that hoppers are never over-filled thereby compromising accuracy and safety (Upper Garner High Level Sensor, Weigh Hopper High Level Sensor and Lower Garner Maximum Draft Level Sensor). Many competitors use mechanical rotary devices that spin and alarm when material prevents them from turning; however, like any mechanical device they are subject to failure. We use much more expensive magnetic proximity switches. They are highly reliable with no moving parts to go wrong.

Feature Seven:

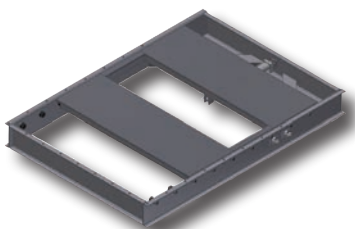
We utilize a lower garner empty level sensor

For customers loading rail cars, an empty level sensor can be added in the lower garner. By incorporating Super SmartLoad software (see page 3), you can transfer two drafts out of the upper garner and hold them in the weigh hopper and lower garner, thereby relieving the upper garner of two drafts which allows the conveying equipment to run for nearly a minute longer than competitive systems.

Feature Eight:

Superior gate design

We utilize a twin ladder gate design on the upper garner and weigh hopper discharge gates which halves the gate stroke, reduces the size of the hydraulic power unit and allows the cylinders to completely fit inside the scale enclosure. Others use clam gates, but these suffer from lower accuracy, need a larger hydraulic power unit to handle the longer cylinder strokes and require more height which can be better used for additional capacity in the upper garner.



Twin Ladder Gate Design

Our gates are made of structurally reinforced AR-400 (Abrasion Resistant) plate which provides longer life than regular steel gates provided by others. Our gates are also supported by cam rollers along the full length of travel. Others use a combination of cam followers with inferior rollers that provide greater friction and require more maintenance.



***Cam Rollers
On Gates***

Feature Nine:

Lowest height scales on the market

The exterior sheeting on our scales wraps around the outside of the structural support tubes. This provides greater capacity in each garner providing the lowest height scale on the market.

With our low profile design, we can fit into spaces where others can't. Or you can use the height to increase the size of the upper garner for additional storage during operation.

Feature Ten:

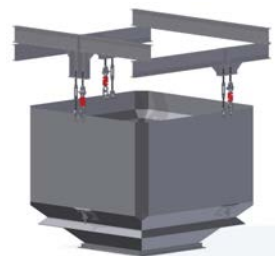
Fully enclosed design

We invented the concept of the fully enclosed bulk weigher which eliminates the need for venting between the weigh hopper and the lower garner because they are open topped. Our unique design uses the four outside structural support columns to intervene between the upper garner and the weigh hopper. This eliminates the need for additional venting and all the venting issues that come with scales that have closed hopper tops.

Feature Eleven:

Superior load cell mounting design

Some suppliers use two load cells which can provide for an unstable platform or four load cells which can hide errors due to uneven pressure exerted on one or more load cells. Other suppliers use single or double-ended compression shear beam load cells that are subject to side forces that can distort the accuracy of the scale. We utilize three "S" type tension load cells. Just like a three-legged stool, this superior mounting design ensures that the weight is being applied equally to all load cells.



***Three "S" Type
Tension Load Cells***

Feature Twelve:

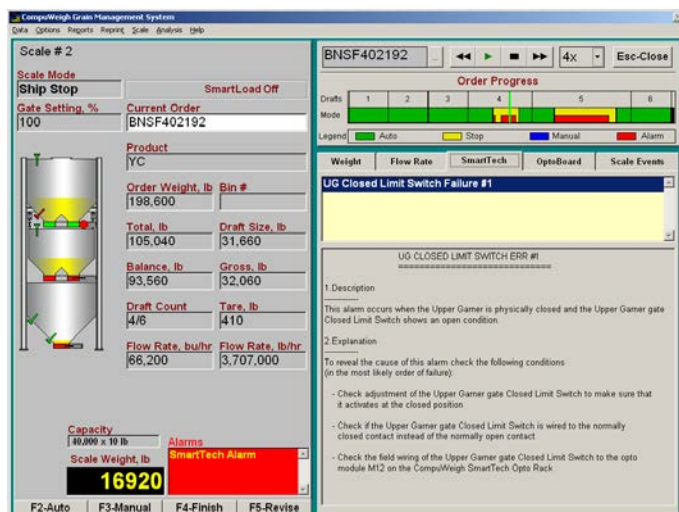
Built to last

When you purchase a CompuWeigh bulk weigher you are buying a tank! Our scales are overbuilt to minimize any possible deflection and the hoppers and gates are generously sized to ensure that they easily meet the stated capacity with the capability to exceed that capacity should your business grow.

Complete system support

When a bulk weigh scale has a problem, the first sign of trouble typically appears on the scale controller screen even though the physical scale is probably where the actual problem lies. Our competitors either understand how to design scales or how to write software. **We are the only company that has experience with both.**

Our CD-4000 scale control system is supplied with SmartTech. This unique system monitors over 40 aspects of the scale. When SmartTech detects a problem such as a faulty weigh hopper high level sensor, it analyzes the problem and tells your operator and service person exactly what the problem is, where it is located and how to fix it. When loading a unit-train at 2:00 in the morning, this is important information! Needless to say, **no one else has this capability.**



**SmartTech Scale Monitoring System
Sample Screen**

Other noteworthy features:

- All work platforms, ladders and railings are OSHA approved and are a bolt-on design to ensure easy installation without the need for welding and then repainting certain parts of the scale.
- Liners are available for hopper cones and the gate hogbacks in a variety of materials including AR plate, urethane metal backed and custom fitted ceramic tile.
- A choice of hydraulic or pneumatic operating systems are available.
- Automatic test weight lifting equipment is available to make recalibration a snap.

- Our bulk weigh scales offer a superior paint job. Our standard paint includes machine tool clean and chemical wipe down preparation, one coat of epoxy primer and one coat of Aliphatic Urethane finish. This can be upgraded to include shot blasting to SSPC-6 standards, one coat zinc rich primer and one coat epoxy finish paint.

Bulk Weigh Scale Options

Samplers

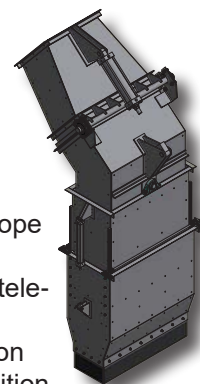
Gamet rotary sampler's electrically driven crosscut extracts a representative grain sample. The transfer unit moves product to a secondary cutting process where the sample is reduced to the required size. Remaining product is returned to product flow. Includes sampler, transfer unit, secondary cutter, control box and sample cabinet.



Rail Load-out Spouts

Special low height vertical hinged spouting provides in-line loading with the rail car that telescopes into and out of the rail hatch, and hinges up via hydraulics. Spouting mates with sampler discharge and provides the following features:

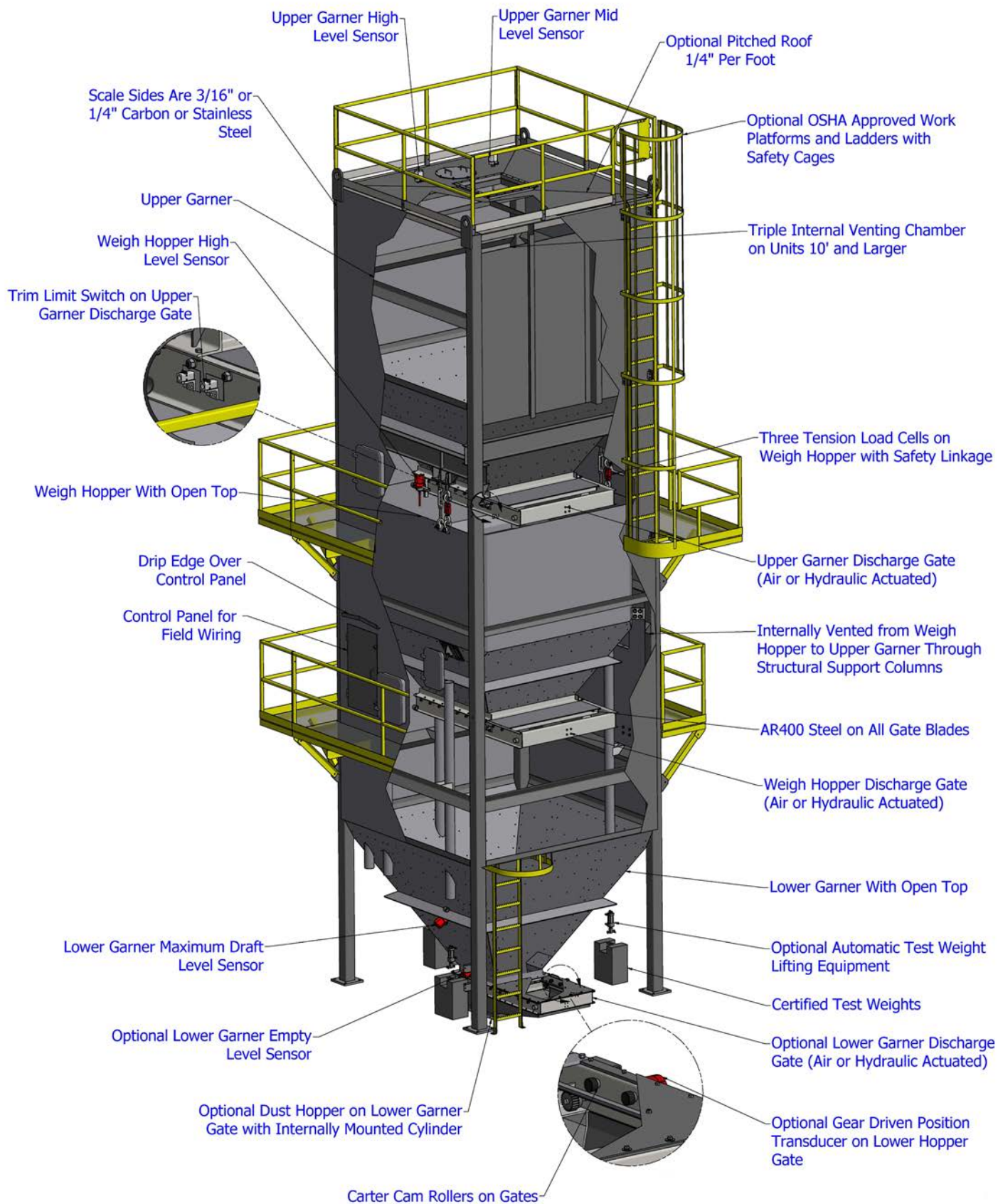
- Hinged to raise spout out of rail envelope
- 24" telescoping at rail car inlet
- Hydraulic operation for hinge and telescoping sections
- Control solenoid valves for each motion
- Check valves to maintain spout position for each motion
- Lined spouting assembly with 1/4" EMBU expanded metal backed urethane
- A hydraulic accumulator is available as an option to handle the extra hydraulic fluid required without affecting the accuracy of the scale



Control Rooms

Prefabricated control rooms are pre-wired with lights and 110V receptacles. Other features include HVAC, tile floor, paneled walls, 12' of standard width L shaped counter and approval drawings.





Bulk Weigh Scale Control Systems

Up until now, we have been focusing primarily on the scale itself, but what is really important is that the scale and the control system work perfectly together. We are the only company that designs both the scale and control system to provide you with a complete, engineered solution.



DWC-400

This low cost, NTEP Certified controller delivers 99.9% accuracy and is housed in a rugged stainless steel cabinet ready for wall mount installation. This model is a good balance between price and performance and is ideal for legal-for-trade-weighing or for in-process weighing, inventory control and calculating production yields. You

can easily monitor and control all your scale operations in real-time. All critical elements of the weighing process are graphically displayed on the large LCD backlit screen with helpful messages on current scale conditions including critical alarm notification. For future expansion, you can easily upgrade to CompuWeigh's GMS-400 Grain Management System®.



GMS-400

Adding the GMS-400 industrial computer to the DWC-400 provides a number of key benefits including:

- 19" full color monitor instead of the small LCD screen on the DWC-400
- Ability to pre-enter the track list when handling rail car weighing
- Integration with RF readers for automatic identification of rail cars
- Ability to run reports and to export data in a variety of formats (Excel, Word, PDF, etc.) for further use by management
- Integration with accounting systems which saves time and eliminates clerical errors
- Inclusion of SmartPlay to enable managers to investigate operation of whole system to improve productivity
- Integration to automation systems using OPC



CD-4000

The high performance CD-4000, our most popular bulk scale controller, calculates the flow rate 60 times a second and selects gate closing time to an accuracy of 1/5,000th of a second, so the weigh hopper can be safely filled to a higher level on each draft than any other

controller. You can expect 5 to 10% better throughput by bringing product to the scale faster. The unit has a single-board microcomputer with a heavy-duty power supply and is mounted in an industrial steel enclosure. The controller has no hard drives or other moving parts. Competitive systems are based on office grade equipment. Upgrade at any time to the GMS-4000 to allow for accounting integration, rail and truck RFID, grading and reporting. Just add CompuWeigh's GMS-4000 industrial computer to the CD-4000 and your high-speed shuttle train load-out terminal is up and running.

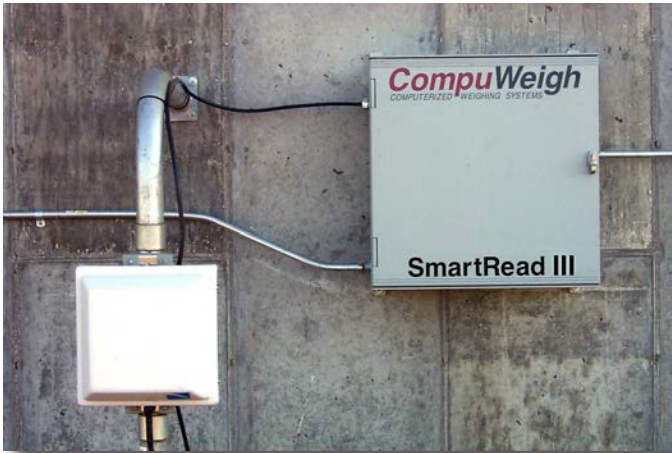


GMS-4000

The GMS-4000 is a PC based "Windows" industrial computer that expands the capabilities of the CD-4000. With the Grain Management System® (GMS), you can automatically identify railcars via RFID technology and export all transactional data straight to your accounting system. GMS is designed to increase throughput at the scale, reduce labor costs, eliminate

duplicate data entry and streamline the whole process of managing scale transactions from receiving to load-out. Incorporating GMS into your bulk weighing operation will improve operating efficiency, speed and accuracy with a typical ROI in as little as 2-3 months of installation.

Control System Options



SmartRead III

Available with GMS-400 and GMS-4000, SmartRead eliminates the need to walk the track writing down car numbers and load limits, and then having to reenter this information into the scale system. It is therefore safer, quicker and eliminates all clerical errors.

As cars pass the reader, the unique car number contained in the RF tag located on the side of the car is read and automatically entered into the GMS In-transit list so cars can be processed without any human intervention. Coupled with the SmartCar database, the system will also calculate the optimum load-out weight for outbound cars. This maximizes profits while eliminating fines.

For locations that bring cars past the load-out/receiving area and then pull the string of cars back again, there is a 'Reverse' button that turns the list of cars upside down so the cars are in the correct order for processing.



Wheel Sensor Technology

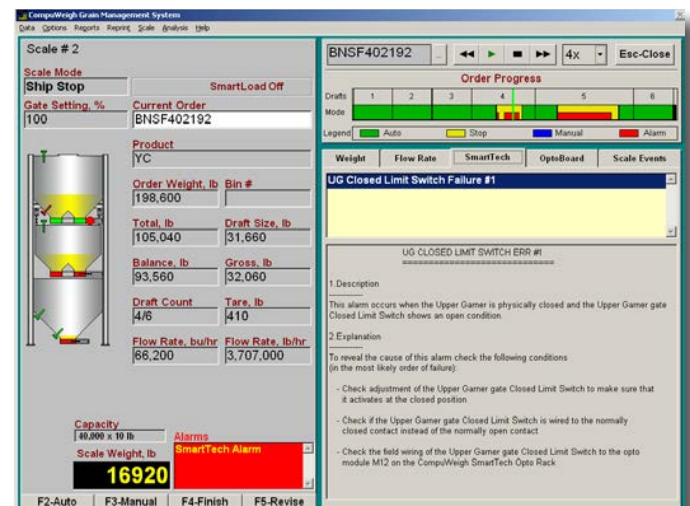
Unique to CompuWeigh is the use of a wheel sensor. This unit mounted right on the track counts the four axles of a car and expects to read an RF tag. If no tag is read the operator is immediately informed to enter that car's ID into GMS. This potentially "invisible" car is now correctly shown in the list and will be loaded with the correct weight. With other systems the wrong car can easily be filled.

Additional benefits of SmartRead III include:

- Choice of wavelengths to avoid interference
- Adjustable signal strength to ensure accurate reading
- Highly visible signal lights for trouble shooting
- Can add extra antenna for bidirectional loading / unloading

SmartPlay

Available with our GMS-400 and GMS-4000 control systems, SmartPlay is a revolutionary product that allows you to run a "movie" on any bulk weighing scale transaction. This screen shows every message, print-out, weight and I/O while it replays the transaction. The movie can be run at different speeds from super-fast to slo-mo and can be stopped at any time for a detailed analysis. This provides management the ability to review production and investigate why, for instance, certain cars were loaded at different speeds. Symptoms such as lack of product supply to the scale, etc. can be easily identified and corrective action taken to prevent the issue from occurring again.



SmartPlay

SmartLink

This accounting interface allows transactional information generated in GMS to be seamlessly downloaded to your accounting system without any data entry. With the SmartLink single or bidirectional interface option, GMS will capture all completed transactions and write the data to a file in the layout specified by the host accounting system so all data imports correctly. Accounting can then select how often the data is transferred to them. Methods of available transmission are FTP, network-based file sharing or serial link. Supported file formats are AgXML v2, AgXML v4, IRD XML, record-based flat file, position-based file, CSV file, XLS file, etc. CompuWeigh can interface to virtually any accounting system including:

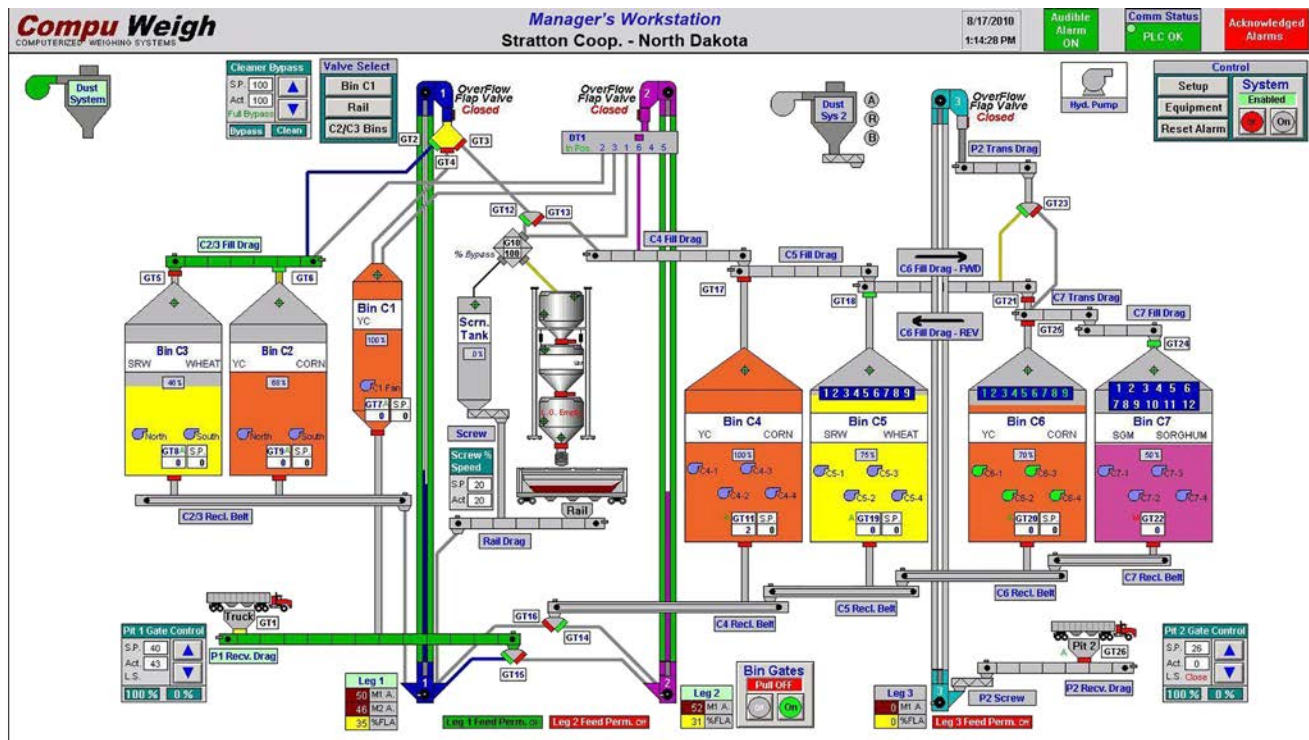
- Aggris
- AgVantage
- Cinch
- Grossmans
- J.D. Edwards
- Oracle
- SAP
- SQL Server
- Vertical
- AgTrax
- AgVision
- dbcSmart
- IRD
- Microsoft Dynamics
- Red River
- Solomon
- SSI

If your accounting software is not listed above, please call for more information. We have the ability to interface to any system with import/export capabilities.

Facility Automation

A unique advantage of working with CompuWeigh is our ability to integrate the scales with all the other equipment in the facility. Other companies provide the scales on a separate system. Our Automation Division can provide full PLC/HMI control of all key equipment including legs, conveyors, diverters while monitoring belt alignment, bearing temperatures, amperage and bin levels to ensure that the facility is run efficiently and safely. The system can be as simple as a country house rail load-out system to automating the largest grain export house in the world or providing an automated weight monitoring system to reduce FGIS personnel. Key benefits of automation include:

- ability to control and monitor the entire facility from one or more work stations
- automatic shutdown in an orderly, safe manner should a hazardous condition occur
- better blending accuracy as gates are automatically set to correct position and then monitored to maintain position
- eliminates human error to prevent unintended mixing of products
- reduced overhead



Automation Sample Screen

Enterprise Inventory Integration

We also offer the most sophisticated inventory system available. This web system completely replaces the manual bin board that is so much of an institution at grain facilities. Unlike other systems, it is completely web based and is capable of running multiple locations simultaneously.

In addition, we provide a barge and rail monitoring system that tracks rail cars and barges on a computer map in real time, as well as providing estimated times of arrival and EDI (electronic data interchange) with the rail companies.

Container Loading Applications



Quite commonly, our bulk weigh scales are utilized to load freight containers with various commodities. We have extensive experience with designing specialized scales featuring extended upper garners, dual discharge spouts and custom software for container loading applications. These range from the basic container transload operations to a container loading module for the GMS-4000 control system that allows you to track containers, even when a container is dropped off by one truck and later loaded and picked up by a second truck.

SmartTruck Technology for Load-out Applications



SmartTruck load-out systems handle the whole process of loading out trucks and containers both in fully unattended and semi-unattended modes to reduce head count and increase throughput while improving safety and security.

SmartTruck utilizes a combination of long range RF cards, outside message boards, electronic photo eyes, video surveillance cameras, IP based intercom systems, electronic signature pads, driver's license readers

and a powerful computer system, customized to your specific application.

The focus is on automating the whole load-out process, managing traffic flow and eliminating or reducing the need to employ anything more than minimal staff.



SmartTruck System with automatic RF identification, message board and remote communication system

CWC Bulk Weigh Scale Specifications

♦ NTEP Approved Certificate #02-059A2

Model #	Capacity: BPH	Capacity: TPH	Capacity: MTPH	Footprint	Hopper Angles	Upper Garner cu/ft.	Weigh Hopper cu/ft.	Lower Garner cu/ft.	Scale Height
CWC-036	3,500 BPH	105 TPH	95 MTH	6' x 6'	45 degrees	65	45	55	14' 7"
CWC-056	5,000 BPH	150 TPH	135 MTH	6' x 6'	45 degrees	100	70	90	17' 5"
CWC-056	5,000 BPH	150 TPH	135 MTH	6' x 6'	60 degrees	100	70	90	19' 1"
CWC-078	7,500 BPH	225 TPH	205 MTH	8' x 8'	45 degrees	125	85	100	17' 1"
CWC-078	7,500 BPH	225 TPH	205 MTH	8' x 8'	60 degrees	125	85	100	19' 10"
CWC-108	10,000 BPH	300 TPH	270 MTH	8' x 8'	45 degrees	170	110	140	17' 7"
CWC-108	10,000 BPH	300 TPH	270 MTH	8' x 8'	60 degrees	170	110	140	20' 11"
CWC-158	15,000 BPH	450 TPH	410 MTH	8' x 8'	45 degrees	240	160	200	20' 5"
CWC-158	15,000 BPH	450 TPH	410 MTH	8' x 8'	60 degrees	240	160	200	23' 1"
CWC-208	20,000 BPH	600 TPH	545 MTH	8' x 8'	45 degrees	330	220	280	24' 0"
CWC-208	20,000 BPH	600 TPH	545 MTH	8' x 8'	60 degrees	330	220	280	26' 1"
CWC-310	30,000 BPH	900 TPH	815 MTH	10' x 10'	45 degrees	500	330	410	25' 0"
CWC-310	30,000 BPH	900 TPH	815 MTH	10' x 10'	60 degrees	500	330	410	28' 2"
CWC-410	40,000 BPH	1,200 TPH	1,090 MTH	10' x 10'	45 degrees	660	440	550	29' 1"
CWC-410	40,000 BPH	1,200 TPH	1,090 MTH	10' x 10'	60 degrees	660	440	550	31' 8"
CWC-412	40,000 BPH	1,200 TPH	1,090 MTH	12' x 12'	45 degrees	660	440	550	25' 4"
CWC-412	40,000 BPH	1,200 TPH	1,090 MTH	12' x 12'	60 degrees	660	440	550	29' 11"
CWC-510	50,000 BPH	1,500 TPH	1,360 MTH	10' x 10'	45 degrees	830	550	690	33' 4"
CWC-510	50,000 BPH	1,500 TPH	1,360 MTH	10' x 10'	60 degrees	830	550	690	35' 6"
CWC-512	50,000 BPH	1,500 TPH	1,360 MTH	12' x 12'	45 degrees	830	550	690	28' 3"
CWC-512	50,000 BPH	1,500 TPH	1,360 MTH	12' x 12'	60 degrees	830	550	690	32' 2"
CWC-612	60,000 BPH	1,800 TPH	1,630 MTH	12' x 12'	45 degrees	990	660	830	31' 1"
CWC-612	60,000 BPH	1,800 TPH	1,630 MTH	12' x 12'	60 degrees	990	660	830	34' 5"
CWC-712	70,000 BPH	2,100 TPH	1,900 MTH	12' x 12'	45 degrees	1,375	875	1,095	37' 5"
CWC-712	70,000 BPH	2,100 TPH	1,900 MTH	12' x 12'	60 degrees	1,375	875	1,095	please inquire
CWC-814	80,000 BPH	2,400 TPH	2,150 MTH	14' x 14'	45 degrees	1,400	980	1,200	40' 7"
CWC-814	80,000 BPH	2,400 TPH	2,150 MTH	14' x 14'	60 degrees	1,400	980	1,200	42' 8"
CWC-914	90,000 BPH	2,700 TPH	2,450 MTH	14' x 14'	45 degrees	1,650	1,100	1,375	please inquire
CWC-914	90,000 BPH	2,700 TPH	2,450 MTH	14' x 14'	60 degrees	1,650	1,100	1,375	please inquire
CWC-1014	100,000 BPH	3,000 TPH	2,720 MTH	14' x 14'	45 degrees	1,875	1,250	1,560	please inquire
CWC-1014	100,000 BPH	3,000 TPH	2,720 MTH	14' x 14'	60 degrees	1,875	1,250	1,560	please inquire
CWC-1114	110,000 BPH	3,300 TPH	3,000 MTH	14' x 14'	45 degrees	2,025	1,350	1,670	please inquire
CWC-1114	110,000 BPH	3,300 TPH	3,000 MTH	14' x 14'	60 degrees	2,025	1,350	1,670	please inquire
CWC-1214	120,000 BPH	3,600 TPH	3,270 MTH	14' x 14'	45 degrees	2,175	1,450	1,800	please inquire
CWC-1214	120,000 BPH	3,600 TPH	3,270 MTH	14' x 14'	60 degrees	2,175	1,450	1,800	please inquire
CWC Series	135,000 BPH	4,050 TPH	3,675 MTH	14' x 14'	45 degrees	2,250	1,500	1,875	please inquire
CWC Series	135,000 BPH	4,050 TPH	3,675 MTH	14' x 14'	60 degrees	2,250	1,500	1,875	please inquire

* Please note: TPH is based on 60 lbs. per bushel or 48 lbs. per cubic foot.

Other sizes are available upon request. Sizes above are approximate and may vary slightly depending on your specific application.

Please contact CompuWeigh for additional details.

CompuWeigh
COMPUTERIZED WEIGHING SYSTEMS

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