

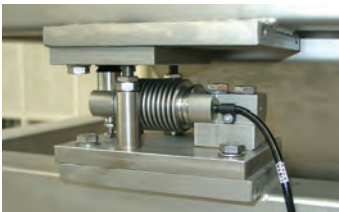
SIEMENS



# Weighing and feeding guide

Complete solutions for a world of weighing applications

[www.siemens.com/weighing](http://www.siemens.com/weighing)



Answers for industry.

# So, what do you want to weigh?

Crushed stone? We can do that. Ore? That too. Cement? Coal? Food? Chemicals? Absolutely. With our field-proven weighing electronics, load cells, conveyor belt scales, solids flowmeters, and weighfeeders, Siemens can weigh anything and everything. Come with us as we show you how.

## Table of Contents

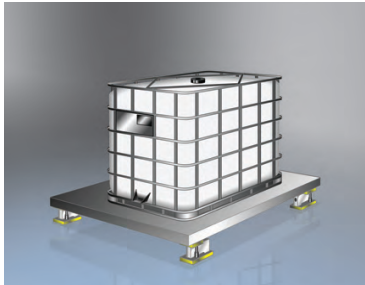
Introduction	2
Overview	4
SIWAREX weighing systems	6
SIWAREX load cells	8
Belt scales	10
Speed sensors	12
Integrators	13
Accessories	14
Solids flowmeters	16
Weighfeeders	18
Totally Integrated Automation	20
Service and support	21
Process protection	22
Remote monitoring and digital displays	23
PI training	24
PI overview	25
Diagrams	26

**Siemens: measuring the weight of the world.**



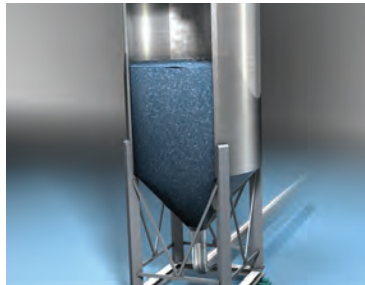
# Weighing and feeding solutions overview

Component solutions



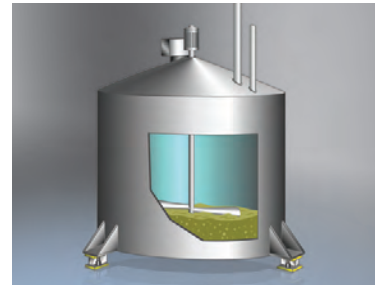
## Platform scales

- The most common scale in industry
- Siemens has a broad range of load cells and weighing electronics to build cost-effective platform scales



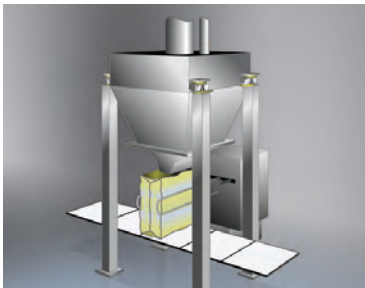
## Hopper weighing

- Liquids, powders, solids, and gases are stored or produced in a variety of tanks and bins
- Measure the mass, no matter what kind of material is stored



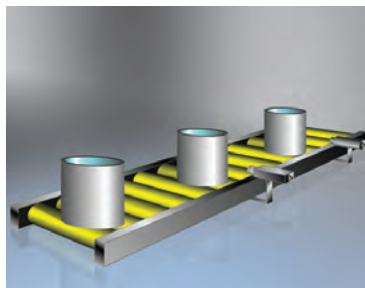
## Batch system

- Successful, high-quality products depend on precise dosing of ingredients
- Siemens' high-quality measuring equipment ensures precise dosing



## Filling machines

- Filling, sack filling, and big bag machines are used in a wide range of industries
- Siemens weighing electronics ensure the filling of solid or liquid goods is completed quickly and accurately



## Checkweighing

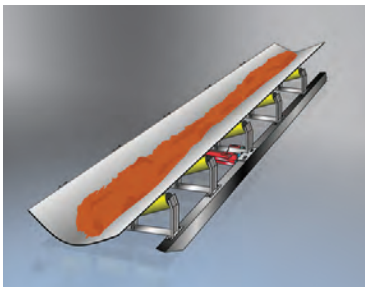
- Ensures the correct weight of the product
- Siemens' weighing electronics provide high functionality of the checkweigher in combination with SIWAREX load cells



## Loss-in-weight

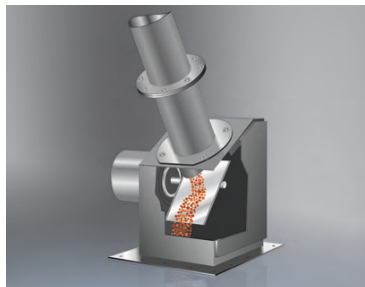
- A system with SIWAREX load cells and electronics gives you high levels of accuracy in continuous dosing applications

Product solutions



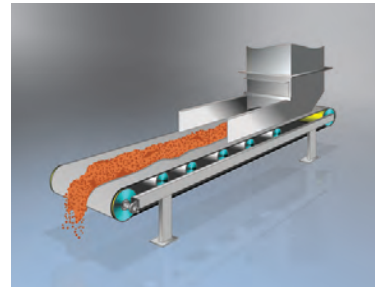
## Belt scales

- Help maximize raw material usage, control inventories, and aid in consistent manufacturing
- Suitable to your specific application requirements



## Solids flowmeters

- Accurately monitor the rate of material in gravity-fed pipes or chutes for production monitoring or precise recipe control



## Weighfeeders

- Control the rate of material into or out of a process
- Flexible to meet any customer requirement

# Successful target applications across every industry

## Mining



Monitoring throughput in mining production with Milltronics MSI belt scale

## Aggregate



Inventory stockpiles on stackers with Milltronics MUS belt scale

## Cement



Monitoring mill rejects with a SITRANS WF330 flowmeter

## Steel



Recipe control in sinter process with SITRANS WW300 weighfeeder

## Power generation



Rail car weighing with SIWAREX load cells

## Pulp and paper



Monitoring the rate of chip feeding into digesters with Milltronics MCS belt scale

## Chemicals



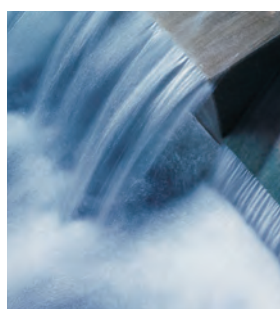
Loss-in-weight feeding with SIWAREX FTC

## Pharmaceutical



Bin weighing with SIWAREX load cells

## Water/wastewater



Continuous monitoring of sludge removed from wastewater with Milltronics MSI belt scale

## Food and beverage



Recipe control with SITRANS WW200 weighfeeder

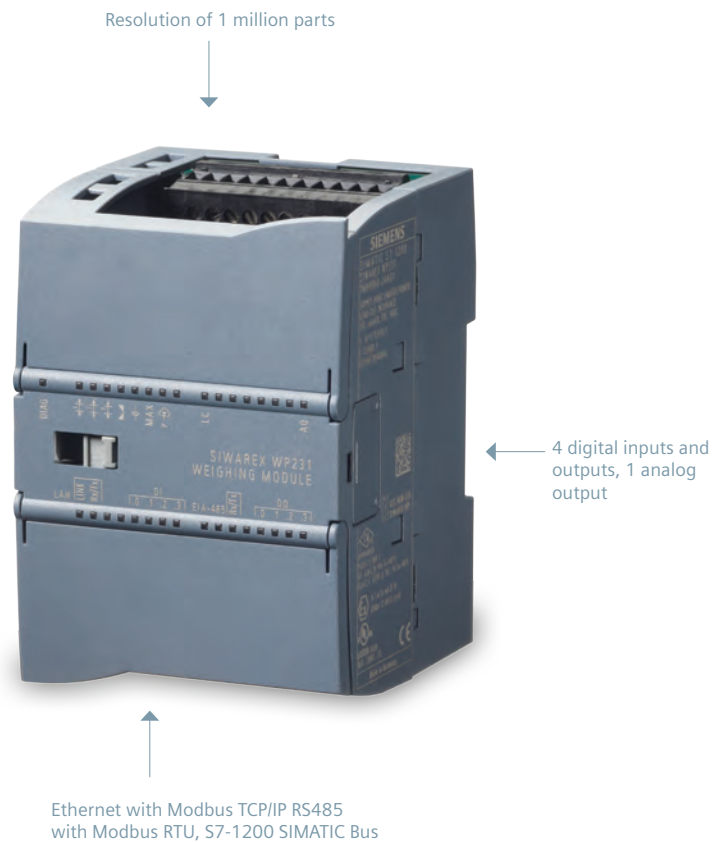
# SIWAREX – precision from a single source

With SIWAREX electronics and load cells, not only are you choosing the highest quality in construction, long-lasting performance, and easy integration into your weighing systems, you are also opening the doors to Siemens' comprehensive spectrum of automation and instrumentation.

Automate all of your scales with SIWAREX weighing modules. Part of Siemens Totally Integrated Automation (TIA), SIWAREX modules can be integrated into SIMATIC S7 and expanded as required to meet your individual requirements.

With TIA, Siemens is the only manufacturer to offer an integrated range of products and systems for automation in all industry sectors.

And, offering you ultimate flexibility, SIWAREX WP weighing modules can be used in any PLC system or even without a PLC as a stand-alone device.





	SIWAREX U	SIWAREX CS	SIWAREX FTA	SIWAREX FTC	SIWAREX WP231	SIWAREX WP241
<b>Order No.</b>	7MH4950	7MH4910	7MH4900	7MH4900	7MH4960-2AA01	7MH4960-4AA01
<b>Typical applications</b>	Basic weighing and force measuring tasks, one or two channel modules available	Basic weighing and force measuring tasks	Automatic and non-automatic weighing, for production of mixtures, filling, loading, monitoring, checkweighing and bagging	Continuous weighing for conveyor scales, solids flow-meters and loss-in-weight feeders	Non-automatic weighing machines, fill level monitoring of silos, load measuring for industrial lifts and rolling mills, container weighing, platform and crane scales	Belt scales
<b>Automation system integration</b>	<ul style="list-style-type: none"> <li>• S7-300 (directly or via ET 200M)</li> <li>• S7-400 (H), PCS 7 (H) (via ET 200M)</li> </ul>	<ul style="list-style-type: none"> <li>• S7-400</li> <li>• S7-300 (via ET 200S)</li> </ul>	<ul style="list-style-type: none"> <li>• S7-300 (directly or via ET 200M)</li> <li>• S7-400 (H), PCS 7 (H) (via ET 200M)</li> </ul>	<ul style="list-style-type: none"> <li>• S7-300 (directly or via ET 200M)</li> <li>• S7-400 (H), PCS 7 (H) (via ET 200M)</li> </ul>	<ul style="list-style-type: none"> <li>• S7-1200 (directly via SIMATIC bus)</li> <li>• Operator panel</li> <li>• Automation systems from other manufacturers, via Ethernet (Modbus TCP/IP) or RS485 (Modbus RTU)</li> </ul>	<ul style="list-style-type: none"> <li>• S7-1200 (directly via SIMATIC bus)</li> <li>• Operator panel</li> <li>• Automation systems from other manufacturers, via Ethernet (Modbus TCP/IP) or RS485 (Modbus RTU)</li> </ul>
<b>Resolution</b>	65,000	65,000	16 million	16 million	1 million	1 million
<b>Approvals</b>	ATEX 95, FM, cUL <sub>US</sub> Haz. Loc.		ATEX 95, FM, cUL <sub>US</sub> Haz. Loc., EU type approval (CE, OIML R76), EU prototype test to MID (OIML R51, R61, R107) legal for trade	ATEX 95, FM, cUL <sub>US</sub> Haz. Loc.	Zone 2, UL, FM in preparation, stand-alone, legal for trade	Zone 2, UL, FM in preparation, stand-alone, legal for trade



**In the name of good taste: modernization of dosing processes**

Cheese company Bel produces a wide variety of products at its dairy in Sablé-sur-Sarthe in the northwest of France.

**Application**

- Five differential scales for dosing various powders required for production
- The system's mechanical components were in very good condition, but the electronic control system was out of date, requiring costly and time-consuming maintenance
- A SIWAREX FTC was chosen to monitor the dosing procedure

**Benefits**

- Using the same mechanical components, the SIWAREX FTC electronic weighing system can now dose up to 40% larger quantities
- This results in a much better performance in the production process and in production consistency

Want more? Visit [www.siemens.com/weighing](http://www.siemens.com/weighing)

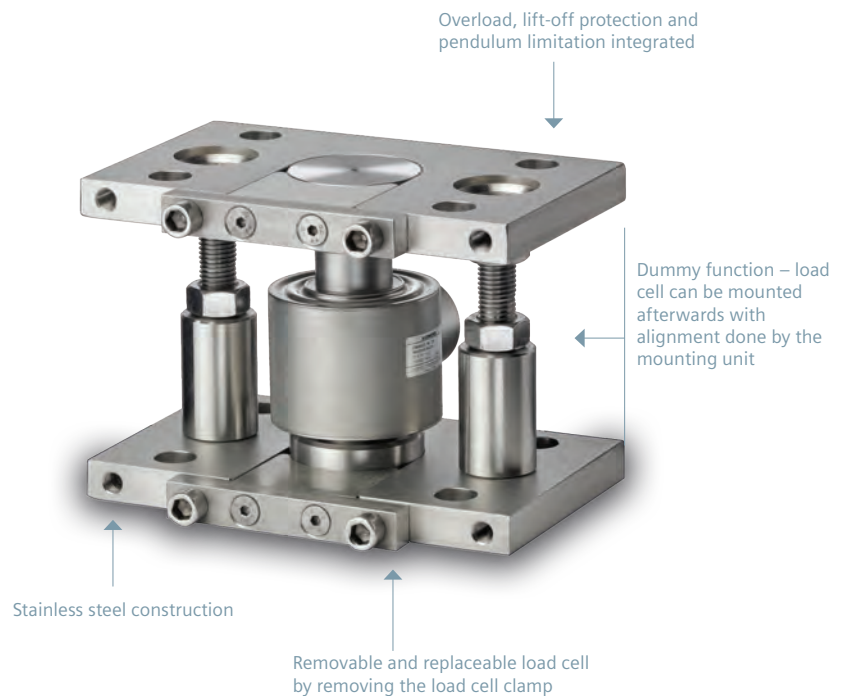
# SIWAREX load cells – the foundation of every scale

SIWAREX load cells have high precision and repeatability for weighing and batching processes. They are designed for a range of applications, especially when accuracy is a must. With Siemens, you can source both your load cells and electronics. Choose from our extensive, performance-graded line of weighing products – with everything you need for the whole range of tasks in your industry.

SIWAREX load cells are ideal in almost any industrial sector – food-processing, steel-making, chemical and pharmaceutical, to name a few.

With the diverse construction types and comprehensive, graded load classes ranging from three kilograms to 500 tons, you are sure to find the right load cell for your application.

Avoid installation troubles by complementing your load cells with SIWAREX mounting accessories. Mounting accessories get you ready for operation in the shortest possible period.







	SIWAREX WL230	SIWAREX WL230	SIWAREX WL250	SIWAREX WL260	SIWAREX WL270	SIWAREX WL270 K	SIWAREX WL280 RN
<b>Order No.</b>	7MH5107	7MH5106	7MH5105	7MH5102/3/4-17/18	7MH5108	7MH5114 high temperature & double bridge option	7MH5113
<b>Type</b>	Shear beam	Bending beam	S-Type	Single point	Compression	Compression	Ring-torsion
<b>Typical applications</b>	Container, overhead rail conveyor, and platform scales	Small scale containers and platform scales	Tank weighing, hybrid scales, or suspended container weighing	Small to medium platform scales and weighing machines	Containers, hoppers, and vehicle scales	Vehicle scales, overhead rail scales, container weighers	Container, conveyor, platform and roller table scales
<b>Nominal load (E<sub>max</sub>)</b>	0.5 to 5 t	10 to 500 kg	50 kg to 10 t	3 to 500 kg	10 to 200 t	2.8 to 500 t	60 kg to 60 t
<b>Accuracy class and max. scale intervals</b>	C3 to OIML R60; 3,000 intervals	C3 to OIML R60; 3,000 intervals	C3 to OIML R60; 3,000 intervals	C3 to OIML R60; 3,000 intervals	C3 to OIML R60; 3,000 intervals 200 t: 0.2%	0.1%	C3, C4, C5 5,000 intervals
<b>Min. scale intervals</b>	E <sub>max</sub> /15,000	E <sub>max</sub> /6,000 to E <sub>max</sub> /15,000	E <sub>max</sub> /7,000 to E <sub>max</sub> /12,000	E <sub>max</sub> /7,500 to E <sub>max</sub> /40,000	E <sub>max</sub> /10,000	N/A	E <sub>max</sub> = 60, 130, 280 kg: E <sub>max</sub> /16,000 E <sub>max</sub> = 500 kg up to 60 t: E <sub>max</sub> /17,500
<b>Max. working load</b>	150% E <sub>max</sub>	150% E <sub>max</sub>	150% E <sub>max</sub>	150% E <sub>max</sub>		120% E <sub>max</sub>	150% E <sub>max</sub>
<b>Supply voltage</b>	5 to 12V	5 to 12V	5 to 12V	5 to 12V	5 to 12V	5 to 12V	5 to 30V
<b>Nominal characteristic</b>	2 mV/V	2 mV/V	3 mV/V	2 mV/V	2 mV/V	1.5 ±0.2 mV/V	60, 130, 280 kg: 1 mV/V, 0.5, 1, 2, 3.5, 5, 10 t: 2 mV/V, 13, 28, 60 t: 2 mV/V
<b>Degree of protection</b>	IP68	IP68	IP67	IP65/IP67	IP68	IP68	IP66/IP68



### Weighing system offers precise filling at high rates

Spanish company Automatització i Control Rovira, S.L. (AiCROV) provides filling solutions for a wide variety of products.

#### Application

- AiCROV uses a platform scale and a pallet scale to checkweigh up to 4,000 containers per hour
- Both scales use a single SIWAREX U weighing module in combination with SIWAREX WL260 SP-S SA series load cells

#### Benefits

- Even for simple level monitoring with SIWAREX U, the weighing module is fully integrated into the SIMATIC S7 control system
- Offers an efficient solution to weight recording that is also very easy to configure and ensures weighing precision

Want more? Visit [www.siemens.com/weighing](http://www.siemens.com/weighing)

# Belt scales – the first choice for weighing systems

All Siemens Milltronics belt scales require very little maintenance and are fast and easy to install and calibrate.

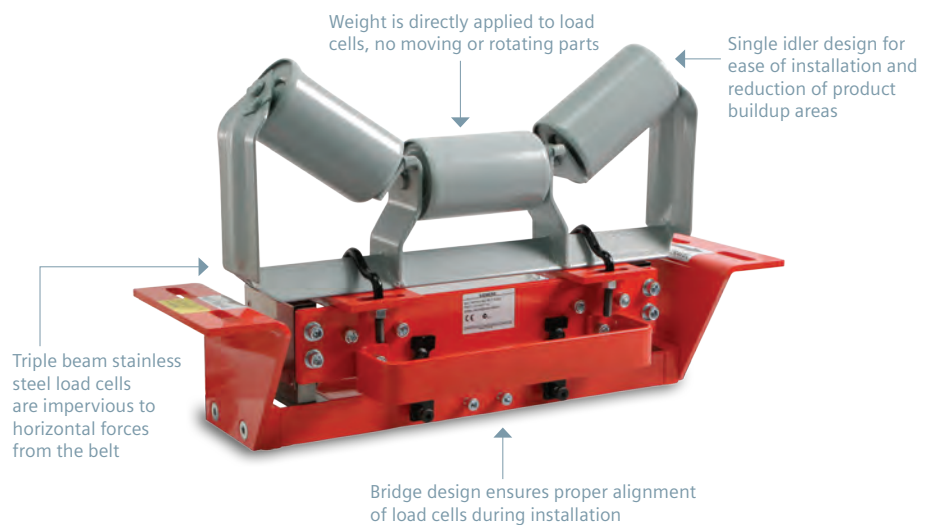
They have no moving parts, include corrosion-resistant load cells, and are designed for 150% of rated capacity and 300% of ultimate load cell capacity.

## Milltronics MSI belt scale – unparalleled performance

Milltronics MSI features simple, proven construction built around the most effective load cell technology.

Structurally sound for the most demanding applications. Drop-in installation makes alignment simple and economical.

Simply put, Milltronics MSI is the easiest belt scale on the market to install and maintain.



Belt scale training – try our eLearning module about Siemens weighing technology and applications.

[www.brainshark.com/siemensca/beltscales\\_EN](http://www.brainshark.com/siemensca/beltscales_EN)





	Milltronics MLC	Milltronics WD600	Milltronics MUS	Milltronics MCS	Milltronics MSI	Milltronics MMI
	Food and light-duty industry		Medium-duty industry		Heavy-duty industry	
<b>Order No.</b>	7MH7126	7MH7185	7MH7123	7MH7125	7MH7122	7MH7122
<b>Typical industries</b>	Food, chemical, tobacco	Food, chemical, tobacco	Aggregate, agriculture, mining, steel	Aggregate, mining, steel	Cement, chemicals, steel, aggregate, food, mining	Cement, chemicals, steel, aggregate, food, mining
<b>Typical applications</b>	Process and load-out control, light-to medium-duty	Process and load-out control, light-to medium-duty	Stackers	Mobile crushers, weighfeeder retrofits	Industrial heavy-duty, for process and load-out control	Heavy-duty, multiple idler for process and load-out control
<b>Accuracy*</b>	±0.5 to 1%	±0.5% to 1%	±0.5 to 1%	±0.5 to 1%	±0.5% or better	MMI-2: ±0.25% MMI-3: ±0.125%
<b>Capacity max.</b>	50 t/h (55 STPH)	100 t/h (110 STPH)	5000 t/h (5500 STPH)	2400 t/h (2640 STPH)	12000 t/h (13200 STPH)	12000 t/h (13200 STPH)
<b>Approvals</b>	CE, C-TICK, GOST	CE, C-TICK, GOST meets FDA/USDA requirements for food processing	CE, C-TICK, GOST	CE, C-TICK, GOST, ATEX, CSA, FM, IECEx	CE, C-TICK, GOST, SABS, Measurement Canada, OIML, MID, ATEX, IECEx, CSA, FM, CMC	CE, C-TICK, GOST, NTEP, Measurement Canada, OIML, MID, ATEX, IECEx, CSA, FM, CMC

\*Accuracy subject to the following: on factory approved installations the belt scale system's totalized weight will be within the specified accuracy when compared to a known weighed material test sample. The test rate must be within the specified range of the design capacity and held constant for the duration of the test. The minimum material test sample must be equivalent to a sample obtained at the test flow rate for three revolutions of the belt or at least ten minutes running time, whichever is greater.



### High-accuracy weighing improves steel company's bottom line

Chinese company XinYu Steel produces and sells iron and steel products including plates, wires, rebars, tubes, and strips.

#### Application

- For measuring fine ore powder, coal powder, and coke, XinYu required belt scales with higher accuracy in line with industry standards for custody transfer
- Operators installed Siemens MMI belt scales, BW500 integrators, and SITRANS WS300 shaft mounted speed sensors

#### Benefits

- Belt scales play a key role in the custody transfer, energy saving, and cost accounting
- The system gives unified management and monitoring of energy and raw materials connected to the network through the whole factory

Want more? Visit [www.siemens.com/weighing](http://www.siemens.com/weighing)

# Speed sensors – reliable conveyor monitoring

Speed sensors play a key role in any belt scale measurement system – the overall system accuracy depends on a reliable speed signal. Siemens offers shaft-driven and belt-driven speed sensors that are easy and economical to install providing reliable and accurate signals.



	Milltronics TASS	Milltronics RBSS	SITRANS WS300	Bend pullies
<b>Order No.</b>	7MH7131	7MH7134	7MH7177	7MH7170/1, 7MH7187/8
<b>Type</b>	Compact, low-profile, wheel-driven return belt speed sensor	High resolution, wheel-driven return belt speed sensor	Compact low to high resolution, pulley shaft-driven speed sensor	Self cleaning, drum and lagged drum pullies
<b>Benefits</b>	<ul style="list-style-type: none"> <li>• Easy, low cost installation</li> <li>• Compact, low-profile</li> <li>• IP67 rated</li> </ul>	<ul style="list-style-type: none"> <li>• Rugged design</li> <li>• Easy, low cost installation</li> <li>• Increased mass for minimizing belt skip</li> <li>• IP67 rated</li> <li>• Intrinsically Safe (IS) version available*</li> </ul>	<ul style="list-style-type: none"> <li>• Rugged design</li> <li>• Small, lightweight</li> <li>• Long bearing life</li> <li>• IP65 rated</li> <li>• Intrinsically Safe (IS) version available*</li> </ul>	<ul style="list-style-type: none"> <li>• Pre-drilled mounting for SITRANS WS300 speed sensor</li> <li>• Creates installation room for belt scale</li> </ul>
<b>Approvals</b>	CE, C-TICK, GOST	Standard: CE, C-TICK, GOST IS: ATEX, CSA/FM, CE, C-TICK, GOST	Standard and IS: CE, C-TICK, GOST, CSA, FM, ATEX, IECEx	CE, C-TICK

\*Pepperl+Fuchs switch isolator required to interface with integrator.

# Integrators – state-of-the-art communications

## Milltronics integrators

Milltronics integrators from Siemens incorporate proven electronic load cell balancing to perform basic and sophisticated measurement and flow control functions.

Our integrators display primary speed and load values, as well as derived values of rate and total on the LCD, or output the information as analog mA output, alarm relay, or remote totalizer or through several industrial communications protocols.



	Milltronics BW500/L	Milltronics BW500	Milltronics SF500
<b>Order No.</b>	7MH7152	7MH7152	7MH7156
<b>Compatibility</b>	Milltronics MLC, MUS, MCS, MSI, and WD600	Milltronics MLC, MUS, MCS, MSI, MMI, WW100, WW200, WW300, and WD600	SITRANS WF100, WF200, WF250, WFS300, WFS320
<b>Display output</b>	Rate, totalized weight, belt loading, belt speed	Rate, totalized weight, belt loading, belt speed, PID, batching	Rate, totalized weight, PID, batching
<b>Alarm relay</b>	Two programmable SPST Form A contacts rated 5A at 250 V AC non-inductive, reversible	Five programmable SPST Form A contacts rated 5A at 250 V AC non-inductive, reversible	Five programmable SPST Form A contacts rated 5A at 250 V AC non-inductive, reversible
<b>Approvals</b>	CSA <sub>NRTL/C</sub> , FM, CE, C-TICK, GOST	CSA <sub>NRTL/C</sub> , FM, CE, C-TICK, GOST, NTEP, OIML, MID, Measurement Canada	CSA <sub>NRTL/C</sub> , FM, CE, C-TICK, GOST
<b>Options</b>	PROFIBUS DP, Allen-Bradley Remote I/O (AB RIO), DeviceNet, ProfiNet IO, Modbus TCP I/P, EtherNet I/P industrial communication options	Two additional analog inputs; two outputs programmable for PID control, PROFIBUS DP, AB RIO, DeviceNet, ProfiNet IO, Modbus TCP I/P, EtherNet I/P industrial communication options	Two additional analog inputs; two outputs programmable for PID control, PROFIBUS DP, AB RIO, DeviceNet, ProfiNet IO, Modbus TCP I/P, EtherNet I/P industrial communication options

### Belt scales meet the high demand of custody transfer

One of the UK's largest quarrying companies and building materials suppliers provides materials such as sand, hard rock, and gravel.

#### Application

- To stay in line with custody transfer regulations, the company needed to replace an old belt scale that was no longer reliable or accurate
- Operators installed Siemens Milltronics MMI belt scales and Milltronics BW500 integrator, both approved for use in custody transfer applications

#### Benefits

- Exceptionally high accuracy – the scale is producing at  $\pm 0.25\%$  of the nominal flow rate for the system
- New belt scale has greatly decreased maintenance requirements

Want more? Visit [www.siemens.com/weighing](http://www.siemens.com/weighing)

# Belt scale accessories – calibration made easy

Belt scale accessories give you effective stock control, reduce transaction costs, and protect your assets.

Mechanical calibration aids such as hoisting systems are used for test weights and calibration chains. Siemens

belt scale accessories complete the package – everything needed for the whole range of belt scale-related tasks.



	Milltronics MWL weight lifter	Milltronics test chains	Test chain storage reels
<b>Order No.</b>	7MH7218	7MH7161	7MH7163
<b>Description</b>	Calibration weight lifter for use with MSI, MMI, MUS, and MCS belt scales. MWL safely applies and stores calibration test weights for belt loading simulation	Calibration test chains for dynamic belt loading simulation for Milltronics belt scales. All test chains are bushed and minimum length is 1.2 m (4 ft)	Calibration test chain storage reels for motor driven chain application and storage. All test chain storage reels come with a geared brake motor
<b>Benefits</b>	<ul style="list-style-type: none"> <li>• Safe and easy application of belt scale reference weights with the operator remaining away from the conveyor</li> <li>• Modular construction, easily adaptable to different conveyor widths</li> <li>• Low profile allowing easy fit into belt conveyor</li> <li>• Easy-to-store drive handle that can be applied to left or right side of MWL or motorized option</li> <li>• Security pin to ensure safe storage of weight</li> </ul>	<ul style="list-style-type: none"> <li>• Simulates dynamic scale loading of a known weight value, thus supplying the calibration reference</li> <li>• A greater test load can be applied to high capacity belt scales and weighfeeders because most weighbridge designs can only accommodate a limited number of static weights</li> <li>• High capacity test loading is especially important on systems using mechanical weighing elements and lever systems because they calibrate the systems with test load values close to normal operating loads</li> </ul>	<ul style="list-style-type: none"> <li>• Electronically apply and retract calibration test chains</li> <li>• Important when high capacity test chains are used to calibrate belt scales</li> <li>• An electronic geared brake motor rolls the chain onto the belt and over the weigh length. The brake will hold the chain in storage if power fails to the motor</li> <li>• Available in multiple compartment styles to simulate different loading conditions</li> </ul>



	Termination boxes	Chart recorder	Ticket printer	Roll printer	Remote totalizer
<b>Order No.</b>	7MH7723-1ND, 7MH7723-1NE	7MH77261AL	7MH77261AK	7MH77261AT	7MH77231GG
<b>Benefits</b>	Connect belt scale and speed sensor to a single point on the conveyor	<ul style="list-style-type: none"> <li>Track physical data for production totals</li> <li>Two alarms: high/low</li> <li>Alarms when 100% of set rate is exceeded or for below 20% of set rate</li> <li>Displays production total during power failure</li> </ul>	Prints totals to produce production records to meet the standards of approval agencies	For continuous printing of totals to produce production records to meet the standards of approval agencies	<ul style="list-style-type: none"> <li>Two alarms: high/low</li> <li>Alarms when 100% of set rate is exceeded or for below 20% of set rate</li> <li>Displays production total during power failure</li> </ul>



	Panel totalizer	Inclinometer	HMI
<b>Order No.</b>	7MH77261AU	7MH77261AP	7MH7726-1AW, 7MH7726-1AX, 7MH7726-1AY, 6AV66430AA011AX0, 6AV66420BA011AX1, 6AV66430CB011AX1
<b>Benefits</b>	Displays production total during power failure	Provides mA output based on angle of conveyor	<ul style="list-style-type: none"> <li>Remote access for up to four Milltronics BW500 integrators</li> <li>Single parameter access</li> <li>No PLC interface required</li> <li>Calibration and totalizer resets from panel</li> </ul>



### Smooth sailing in the cement industry with innovative belt scales

Chinese company Longyuan Construction has five 3000-ton-grade berths for loading cement products onto waiting ships.

#### Application

- The company found that decreased stability and durability of their existing belt scales was a growing problem
- Installed a Milltronics MMI belt scale with Milltronics BW500 integrator and SITRANS WS300 speed sensor

#### Benefits

- The new system has increased the company's efficiency
- Belt scales have reduced ongoing maintenance expenses and lessened facility downtime

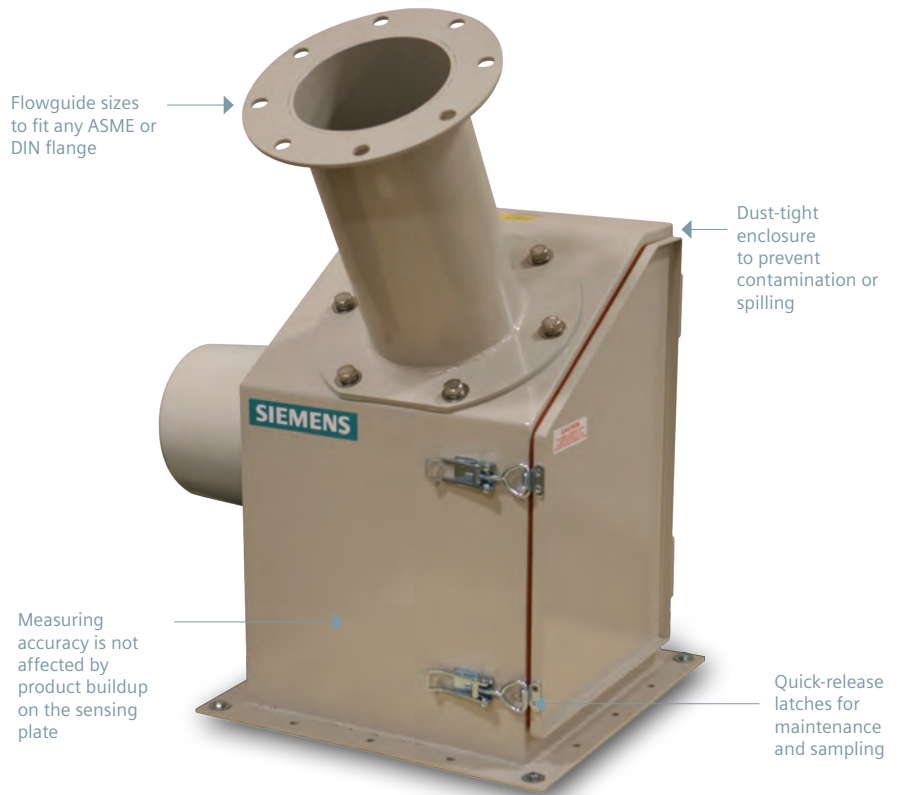
Want more? Visit [www.siemens.com/weighing](http://www.siemens.com/weighing)

# Solids flowmeters – consistent and continuous metering

SITRANS dry solids flowmeters enhance process control, giving you improved product quality and a better bottom line. Our flowmeters provide continuous in-line weighing of dry bulk solids with accurate, repeatable results.

SITRANS solids flowmeters are heavy-duty and low maintenance. They have a totally enclosed design to eliminate product waste or contamination and reduce plant maintenance. Since the units are dust-tight, they create a healthier work environment, especially when hazardous substances are present.

They easily manage materials ranging from puffed wheat to iron ore. They are unaffected by product buildup as they only sense the horizontal movement of product impact.



## Improving accuracy and reducing costs in the grain industry

Grain terminals worldwide process a variety of grains to be used directly or manufactured into countless numbers of products.

### Application



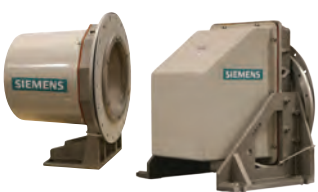
- Terminals using volumetric measurement such as screw conveyors for loading grain into trucks or rail cars only get between 5-10% accuracy
- Installing a SITRANS WF100 dry solids flowmeter immediately shows results

### Benefits

- With an accuracy of  $\pm 1\%$ , this flowmeter gives operators the ability to load rail cars and trucks to a higher capacity, reducing total shipping costs
- A variety of liners available for corrosion or abrasion resistance makes this flowmeter well suited for grain measurement

Want more? Visit [www.siemens.com/weighing](http://www.siemens.com/weighing)



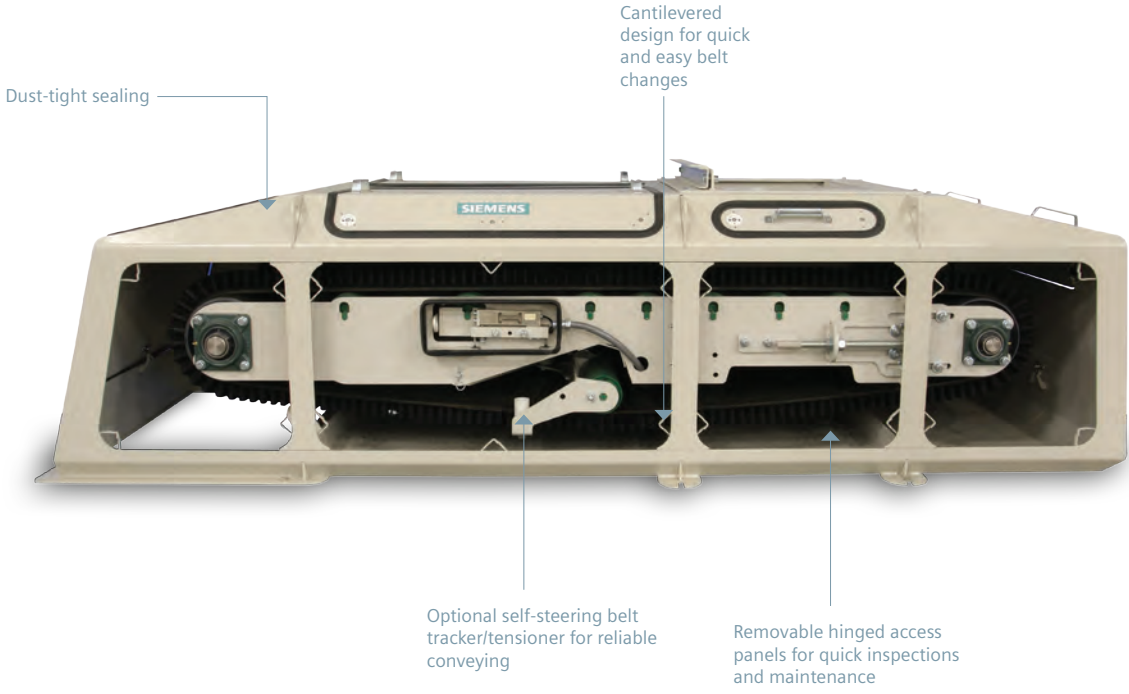
Strain gauge load cell based flowmeters		SITRANS WF100	SITRANS WF200	SITRANS WF250
	Order No.	7MH7186	7MH7115	7MH7115
	Typical industries	Food, chemical	Aggregates, food, cement	Cement
	Typical applications	Monitoring of food ingredients, pet food blending, plastic pellet production, silica sand in glass making	Grinding mill rejects in cement, load-out of grains and seeds	Cement in aerated gravity conveyor
	Accuracy*	±1% (33 to 100% of rate)		
	Capacity range	3 to 200 t/h (3 to 220 STPH)	200 to 900 t/h (220 to 990 STPH)	200 to 900 t/h (220 to 990 STPH)
	Approvals	CE, C-TICK, GOST, CSA, FM, ATEX, IECEx, stainless steel options meet FDA and USDA requirements for food processing		
LVDT based flowmeters		SITRANS WF330	SITRANS WF340	SITRANS WF350
	Order No.	7MH7102	7MH7104	7MH7106
	Typical industries	Chemicals, food, steel, power	Chemicals, food, steel, power	Cement
	Typical applications	Fly-ash, lime dosing, cement flow and control in mining, flour stream monitoring	Fly-ash load-out, lime dosing, gypsum flow	Powders and granulates conveyed by aerated gravity conveyors, fly-ash load-out, precipitator dust
	Accuracy*	±1% (33 to 100% of rate)		
	Capacity range	0.2 to 300 t/h (0.2 to 330 STPH)	0.2 to 300 t/h (0.2 to 330 STPH)	0.2 to 300 t/h (0.2 to 330 STPH)
	Approvals	CE, C-TICK, GOST, CSA, FM, ATEX, IECEx, stainless steel options meet FDA and USDA requirements for food processing		
SITRANS WFS sensing heads		SITRANS WFS300		SITRANS WFS320
	Order No.	7MH7110		7MH7112
	Typical applications	For use with SITRANS WF330, 340, 350 flowmeters		
	Particle size (maximum)	13 mm (0.5")		25 mm (1")
	Flow rate: Minimum Maximum	<ul style="list-style-type: none"> <li>• 0.2 t/h (0 to 0.2 STPH)</li> <li>• 40 t/h (0 to 44 STPH)</li> </ul>		<ul style="list-style-type: none"> <li>• 20 t/h (0 to 22 STPH)</li> <li>• 300 t/h (0 to 330 STPH)</li> </ul>
	Product temp. (max.)	232 °C (450 °F)		
<p>*Accuracy subject to the following: on factory approved installations the flowmeter system's totalized weight will be within the specified accuracy when compared to a known weighed material test sample. The test rate must be within the specified range of the design capacity and held constant for the duration of the test. The minimum material test sample must be equivalent to a sample obtained at the test flow rate for at least ten minutes running time.</p>				

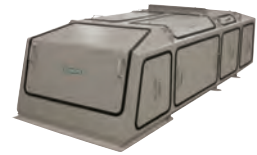
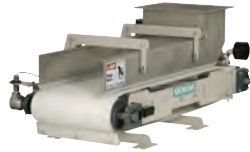
# Weighfeeders – crucial weighing, made to order

SITRANS weighfeeders are configured to meet your application needs, guaranteeing the perfect fit. Ranging from light- to heavy-duty, these weighfeeders deliver fast, reliable, and uninterrupted service no matter what your application. Virtually maintenance-free construction delivers unmatched performance from food processing to aggregates and everything in between.

Weighfeeders are indispensable when automated production processes require continuous inline weighing and feeding.

Flanged belting is available on most models so that product is not lost during transport. The height of the flange depends on model and application. Belt widths and conveyor lengths are made to measure for the required solution.





	SITRANS WW100	SITRANS WW200	SITRANS WW300
<b>Order No.</b>	7MH7180	7MH7300-8	7MH7400-7
<b>Typical industries</b>	Chemicals, tobacco, food	Chemicals, food, tobacco	Aggregates, cement, mining, steel, power, pulp and paper
<b>Typical applications</b>	High-accuracy, low-capacity for minor ingredient additives	Low- to medium-capacity for minor ingredient additives	Medium- to high-capacity for macro ingredient additives
<b>Design rate range</b>	0.045 to 18 t/h (100 lbs/h to 20 STPH)	0.45 to 100 t/h (1,000 lbs/h to 110 STPH)	4.5 to 800 t/h (5 to 880 STPH)
<b>Accuracy*</b>	±0.25 to 0.5%	±0.5% or better	±0.5% or better
<b>Specified range</b>	10 to 100% based on speed		
<b>Approvals</b>	Stainless steel options meet USDA and FDA requirements for food processing, CE, C-TICK	Stainless steel options meet USDA and FDA requirements for food processing	
<p>*Accuracy subject to the following: on factory approved installations the weighfeeder system's totalized weight will be within the specified accuracy when compared to a known weighed material test sample. The test rate must be within the specified range of the design capacity and held constant for the duration of the test. The minimum material test sample must be equivalent to a sample obtained at the test flow rate for three revolutions of the belt or at least ten minutes running time, whichever is greater.</p>			

## Feeding the process correctly helps feed the world treats

In Canada, one of the largest breakfast cereal manufacturers in the world produces millions of granola bars each year.

### Application

- The production of this company's granola bars starts with the feeding of basic ingredients such as rice husks from a large hopper
- Operators installed a SITRANS WW100 weighfeeder

### Benefits

- The weighfeeder's compact design meant that it could fit directly under the hopper with few modifications
- Maintenance is minimal and simple, with the SITRANS WW100's cantilevered design, the belt can be removed and replaced in less than five minutes

Want more? Visit [www.siemens.com/weighing](http://www.siemens.com/weighing)



# Totally Integrated Automation

## Products from the controller level to the field level

With Totally Integrated Automation (TIA), Siemens provides a comprehensive, integrated product and system spectrum for the efficient automation of the entire production process.

TIA enables realization of perfectly tailored automation solutions to meet all individual production requirements.

Thanks to the uniquely integrated qualities of TIA, companies are able to optimize their production processes, accelerate time to market, and reduce production costs – while maintaining a high level of investment security and minimizing overall project complexity.

## Communication flexibility

Siemens TIA approach offers ease of connection to a DCS system such as SIMATIC PCS 7 using industrial standards. Siemens provides communication flexibility, supporting:

- SIMATIC PDM
- PROFIBUS
- HART
- FOUNDATION Fieldbus
- Model 375 HART field communicator and Emerson AMS
- SmartLinx (cards are available for PROFIBUS DP, Modbus TCP I/P, Ethernet I/P, Profinet IO, Allen-Bradley Remote I/O, and DeviceNet)
- FDT Software via SITRANS DTM

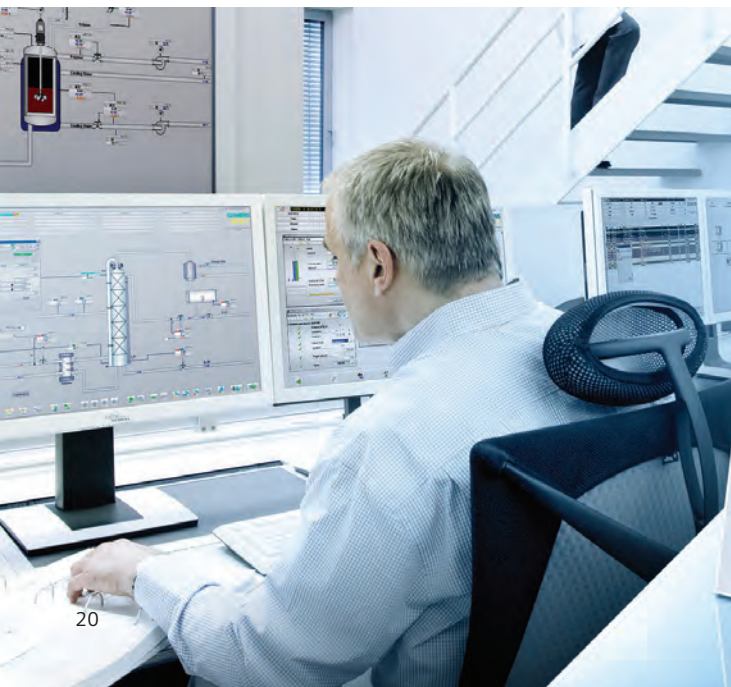
Milltronics BW500/L, BW500, and SF500 integrators offer PROFIBUS DP connection through a SmartLinx module. SIWAREX FTC function module is integrated into SIMATIC S7/PCS 7 and uses the features of this automation system, such as integral communication, diagnostics, and configuration tools.

## Dolphin Plus configuration software

Instrument configuration software for Milltronics BW500/L, BW500, and SF500 that allows you to quickly and easily configure, monitor, tune, and diagnose Siemens weighing devices remotely using a desktop PC or in the field using a laptop. Features include: real-time monitoring and adjustment of parameters; on-screen visualization of process values; copying of data for programming several devices; generation of configuration reports within seconds.

## SIWATOOL

SIWATOOL is a special program for adjusting and servicing SIWAREX weighing modules with a Windows operating system. The program enables the scales to be commissioned without the need for prior knowledge of the automation system. When servicing, the technician can use a PC to analyze and test the procedures in the scale, as well as reading out the diagnostics buffer from the SIWAREX electronics. Features include: parameterization and adjustment of the scale; testing of scale properties; saving and printing scale data; and recording and analysis of weighing sequences.



## PROFIBUS communications offer Totally Integrated Automation

Siemens offers a range of instruments that connect to a PROFIBUS network. PROFIBUS is the fieldbus standard for complete production plants in all process sectors, and helps manufacturers achieve operational excellence and cost savings throughout the complete service life. It is the network solution with the most advantages for Totally Integrated Automation (TIA) providing digital communications between the automation system and field instrumentation on a single serial bus.

# Service and support

## Custom engineering

Siemens provides custom-engineered products to solve your special application needs. From material compatibility challenges to unique size requirements, Siemens custom engineering team can help.

## Service around the world

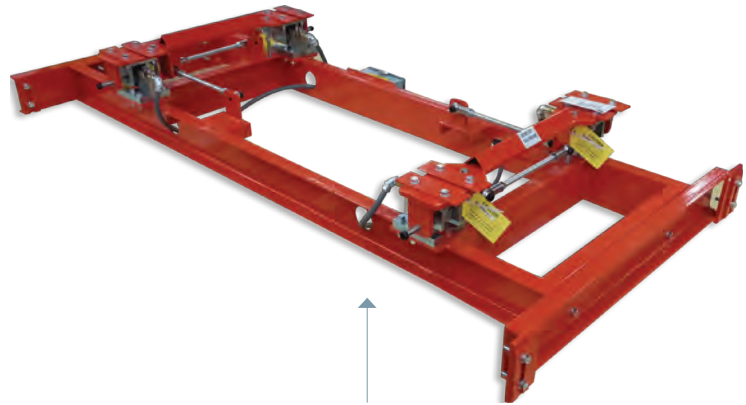
Plants must function reliably at all times. Efficient and effective process instrumentation and analytics are an indispensable requirement to this end. You also need to be certain of fast and competent service from your supplier.

Siemens is a global company that reacts locally. Whether you require consulting, quick delivery, or installation of new devices, the Siemens network of specialists is available to you around the world, wherever your location.

## Service around the clock

Our online support system offers rapid, comprehensive assistance regardless of time or location. From product support to service information, Siemens Industry online support is your first choice – around the clock, 365 days a year.

[www.siemens.com/automation/service&support](http://www.siemens.com/automation/service&support)



Siemens scale for a pan conveyor feeding clinker. Customized belt design and loading

# Process protection

Process protection devices are like an insurance policy for your plant, except better. These devices warn you of problems before they occur or before they develop into something more serious. Motion sensors – letting you know if machinery is going too fast, too slow, or has stopped altogether. Acoustic sensors – protecting your valuable machinery and equipment, detecting subtle noises that you may not hear over the noise of the plant.



	Milltronics MFA 4p	SITRANS WM100	SITRANS AS100	SITRANS CU02
<b>Order No.</b>	7MH7144	7MH7158	7MH7560	7MH7562
<b>Description</b>	Highly sensitive single set-point motion sensor system used with MSP probes	Heavy-duty stand-alone zero-speed alarm switch	Acoustic sensor detects high frequency emissions from friction or the impact of dust, powders, and granules and solids in motion	Operates with the SITRANS AS100 to provide reliable continuous protection for bulk solids flow; two relays are fully programmable



## Motion detection means process protection

The largest of its kind in Canada, the Seymour-Capilano Filtration Plant (SCFP) supplies drinking water to residents of Vancouver, Canada.

### Application

- Monitoring the screw conveyor's motion is crucial to keeping operations running smoothly in the sludge dewatering and disposal system
- The plant uses process protection devices: Milltronics MFA 4p motion failure alarm controller and Siemens heavy-duty motion sensing probe

### Benefits

- Siemens motion sensing devices protect SCFP's process and the plant's valuable equipment
- With tons of solid sludge material moving through the screw conveyor each day, operators are immediately aware of any stoppages

Want more? Visit [www.siemens.com/weighing](http://www.siemens.com/weighing)

# Remote monitoring and displays

## Process monitoring anywhere

Siemens remote displays give you an inexpensive view into your weighing processes. From a simple display to a remote monitoring solution, you choose what is best for you.

SITRANS RD100 is rated for indoor and outdoor applications, in hot or cold environments, and in safe or hazardous areas.

SITRANS RD200 can present data from as many as 100 displays to your local computer.

SITRANS RD500 is a remote data manager providing remote monitoring through data logging, web access, and alarming for instrumentation.



	SITRANS RD100	SITRANS RD200	SITRANS RD500
<b>Order No.</b>	7ML5741	7ML5740	7MH5750
<b>Input types</b>	4 to 20 mA	Universal current, voltage, RTD, thermocouple	Current, voltage, RTD, thermocouple, digital and serial Modbus
<b>Power input</b>	Loop powered	12 to 36 V DC, 12 to 24 V AC, 6W max.	24 V DC
<b>Display</b>	3½ digit display	4 digit display	Virtual display via Web browser
<b>Accuracy</b>	±0.1% of span ±1 count	Input type dependent	Input type dependent
<b>Approvals</b>	FM, CSA hazardous approvals	CE, UL, cUL	CE, UL, cUL

# Process instrumentation training

Learn everything you need to know about instrumentation from the experts

When you need to know more, Siemens provides a full schedule of instrumentation training opportunities for our customers.

Led by field-tested instructors, our hands-on training includes application simulation, a full range of process instruments, and complete industrial communication networks.

Whether it's weighing technology or process instrumentation training (level, flow, pressure, temperature, and communications), we've got you covered.

For current information and schedules, visit our website at: [www.siemens.com/pi-training](http://www.siemens.com/pi-training)

Have a question or need more information? Email us at: [learningcenter.smpi@siemens.com](mailto:learningcenter.smpi@siemens.com)

Prefer to talk to us in person? Call us at: +1 705-740-7650

Our weighing technology center, for example, offers customer-specific training, demonstrations, and hands-on device testing in simulated applications.

Join one of our standard training sessions or ask for a special tutorial focused on a specific application.

The following weighing and feeding applications are available:

- Batching
- Dosing
- Loss-in-weight
- Checkweighing
- Weighfeeder
- Belt scale
- Solid flowmeter
- Load weighing
- Filling

For more information about the Siemens Weighing Technology Center: [hotline.siwarex@siemens.com](mailto:hotline.siwarex@siemens.com)

More information about our weighing training: [www.siemens.com/sitrain](http://www.siemens.com/sitrain)





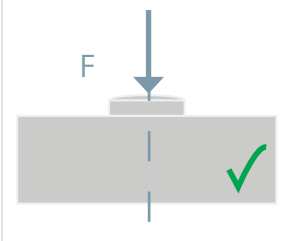
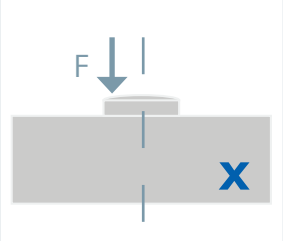
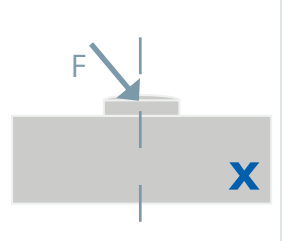
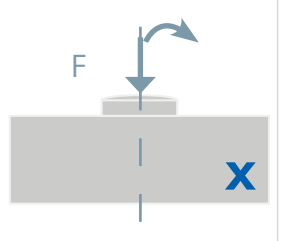
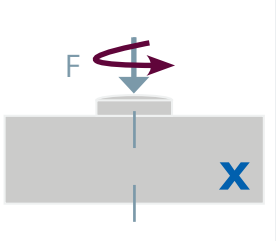
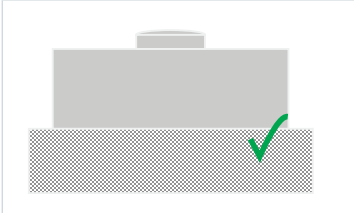
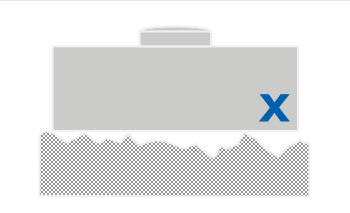
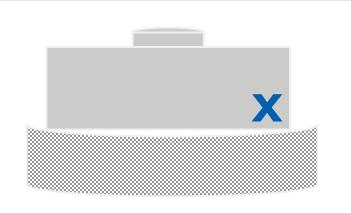
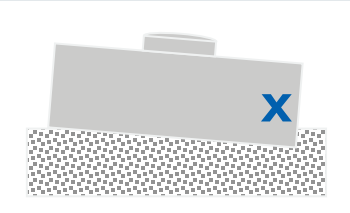
# Our process instrumentation, analytics, automation, and drives product range

Siemens offers the most comprehensive product range for monitoring your processes, with solutions for even the most difficult applications. With Siemens, you can control, monitor, and integrate your operations into a system that works reliably and seamlessly.

Level	Flow	Weighing	Pressure	Temperature	Positioning	Power supplies
						
Process protection	Process controllers	Remote displays	Process recorders	Gas analytics	SIMATIC	Industrial communication
						
Motors	Gear reducers	Motion control	Control gear	PLCs	Drives	HMIs
						

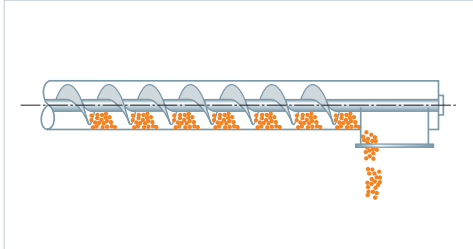
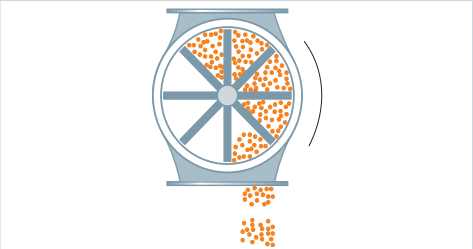
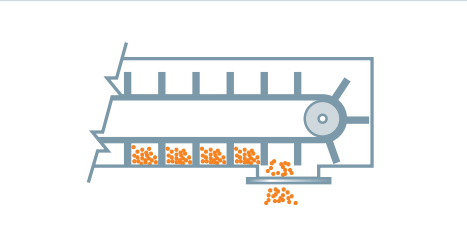
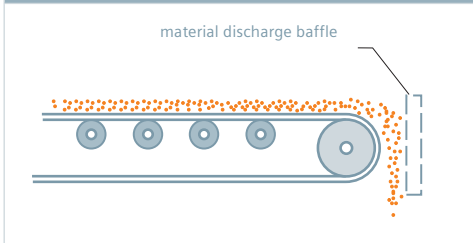
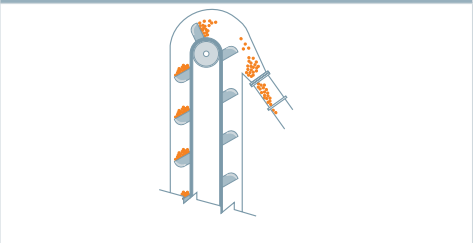
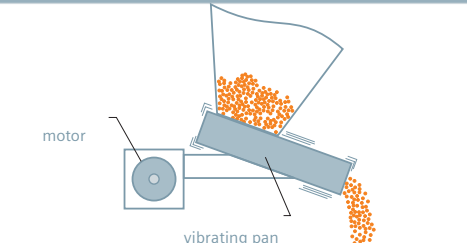
# Load cell applications

Proper application and installation of the load cell will ensure accurate repeatable results:

Ideal load application	Not centered	Not in measuring direction, not vertical	With leverage	With torque
				
<b>Ideal base</b> <ul style="list-style-type: none"> <li>• Horizontally aligned</li> <li>• Stiff</li> <li>• Surface quality appropriate</li> </ul>	<ul style="list-style-type: none"> <li>• Rough surface</li> <li>• Undefined support</li> </ul>		<b>Support bends through</b>	<b>Support too weak</b>
				

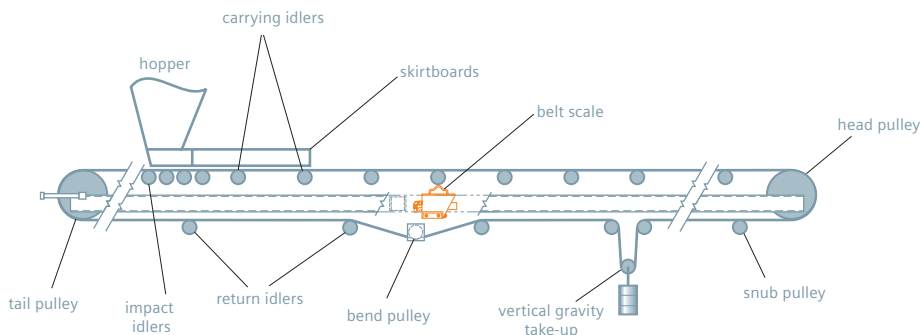
# Flowmeter applications

There are several different feed conditions where a solids flowmeter can be applied. Siemens flowmeters provide accurate, efficient measurements for some of the following most common applications:

Screw conveyor	Rotary feeder	Drag conveyor
		
Belt conveyor	Bucket elevator	Vibratory feeder
		

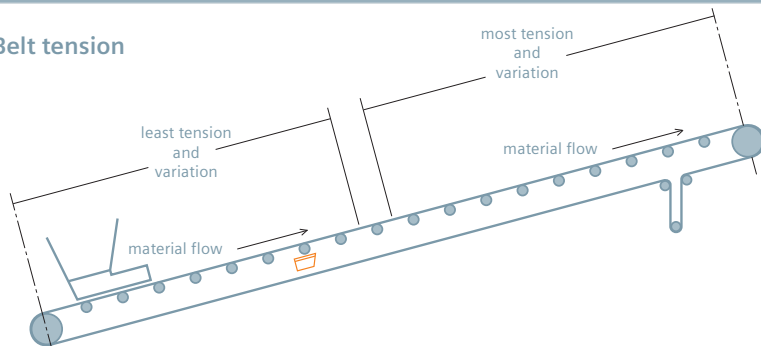
# Optimizing your belt scale

## Belt conveyor terminology



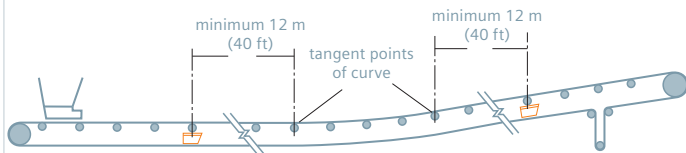
## Belt scale installation – location considerations\*

### Belt tension

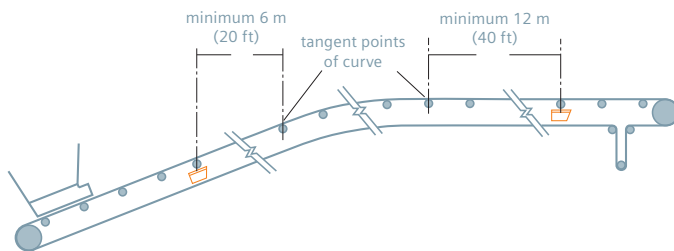


Belt scale should be installed as far from the infeed with the least amount of belt tension.

## Concave style conveyor



## Convex style conveyor

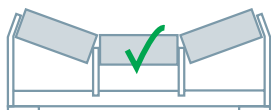


## Suitable belt scale idlers

### Flat conveyor idler



### Troughed conveyor idler

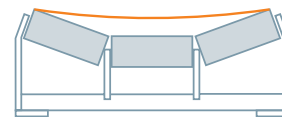


### Offset conveyor idler\*\*



## Belt considerations

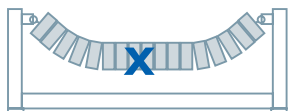
### Belt too stiff



### V-Roll (2 Roll) conveyor idler



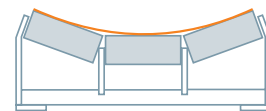
### Catenary idler



### Wire rope conveyor idler



### Good belt flexion

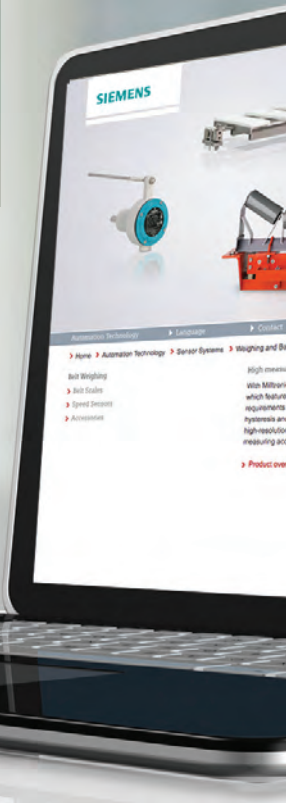


\*These positions are ideal. For geometry outside these guidelines, please contact Siemens technical support. \*\*Acceptable in some applications.

Find out more:  
[www.siemens.com/weighing](http://www.siemens.com/weighing)

Siemens weighing  
technology:  
measuring the weight  
of the world.

Check out  
our weighing  
videos



Subject to change without prior notice  
Order No.: 7ML1996-5ME03  
© Siemens AG 2013

The information provided in this brochure contains merely general descriptions or characteristics of performance which in case of actual use do not always apply as described or which may change as a result of further development of the products. An obligation to provide the respective characteristics shall only exist if expressly agreed in the terms of contract.

All product designations may be trademarks or product names of Siemens AG or supplier companies whose use by third parties for their own purposes could violate the rights of the owners.

Follow us on:

[twitter.com/siemensweighing](https://twitter.com/siemensweighing)  
[youtube.com/thinksiemens](https://youtube.com/thinksiemens)  
[facebook.com/siemensensors](https://facebook.com/siemensensors)

Siemens AG  
Industry Sector  
Sensors and Communication  
76181 KARLSRUHE  
GERMANY