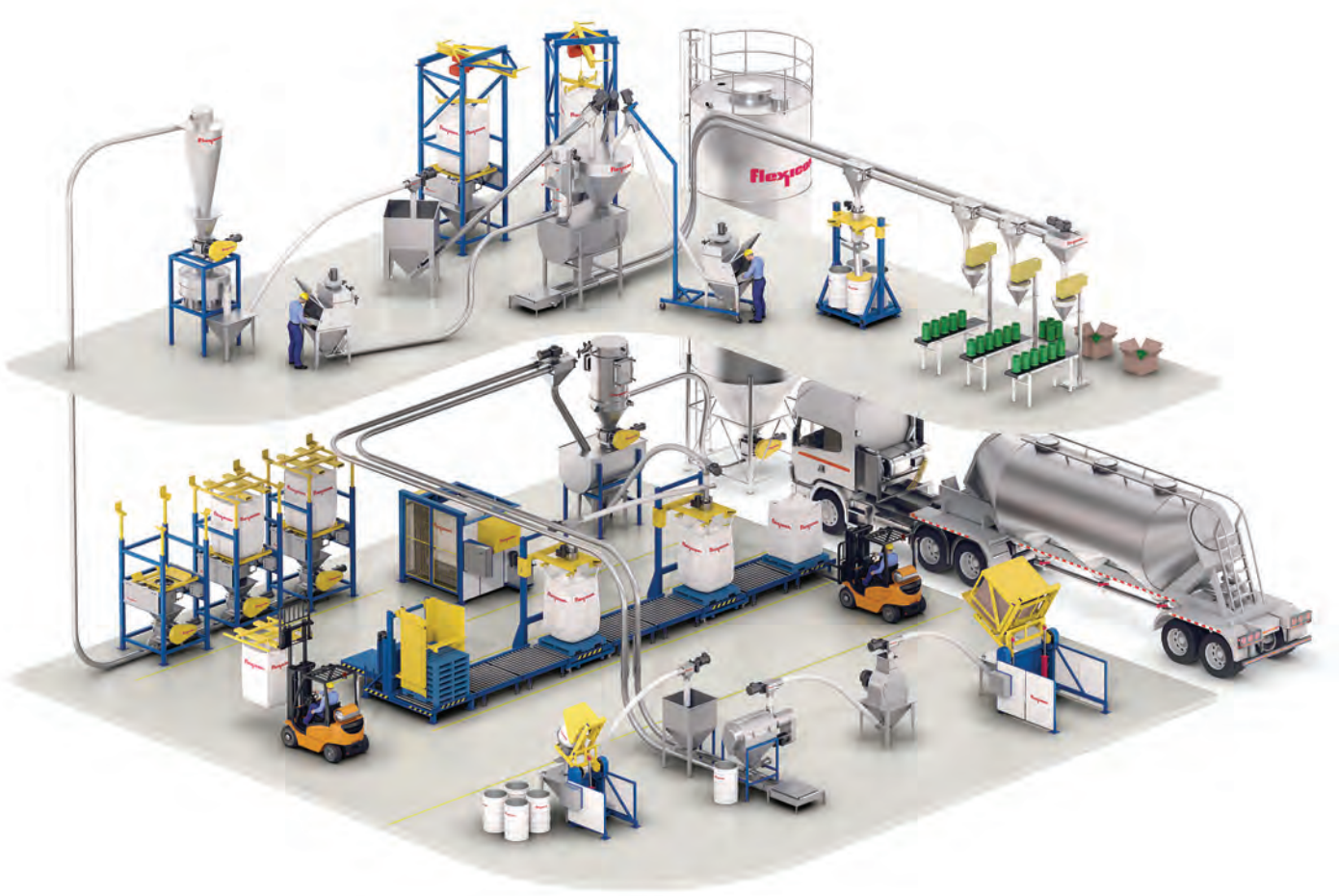
FULL LINE

Flexicon®

Bulk Handling Equipment and Engineered Systems

CONTENTS

Convey, load, unload, weigh, feed, and process virtually any bulk solid material



Flexicon is a world leader in the design and manufacture of bulk handling equipment and custom-engineered and integrated plant-wide systems that transport, discharge, fill, weigh, blend, deliver and/or feed a broad range of powder and bulk solid materials. Flexicon products range from individual equipment to automated systems that source bulk material from interior and exterior plant locations, transport it between process equipment and storage vessels, weigh it, blend it, feed it to packaging lines, extruders, moulding machines and storage vessels, and load it into railcars and trailers.

Choose from a broad range of reliable, high performance equipment in carbon steel with durable industrial finishes, or in stainless steel designed and constructed to industrial, food, dairy or pharmaceutical standards:

- Flexible Screw Conveyors
- Pneumatic Conveying Systems
- Tubular Cable Conveyors
- Volumetric Feeding Conveyors
- Bulk Bag Fillers
- Bulk Bag Dischargers
- Bulk Bag Conditioners
- Weigh Batching Systems
- Manual Dumping Stations
- Drum/Box/Container Tippers
- Storage Vessels

Flexicon can also custom-engineer automated, plant-wide bulk handling and processing systems that integrate Flexicon equipment with existing process equipment and the equipment of other manufacturers including:

- Gravimetric/Volumetric Feeders
- Silos and other storage vessels
- Dryers/Coolers
- Mixers/Blenders
- Screeners
- Crushers/Grinders
- Packaging Machines
- Other bulk processing equipment

In addition to engineering and integrating your system, Flexicon can remove the risk and complexity associated with managing multiple vendors.

Flexicon®

Materials and Industries

Handle free-flowing, non-free-flowing and problematic materials and blends—across all industries that utilise powder and bulk solids

Whether your material is comprised of large pellets, fine powders or both, flows freely or not at all, or has a bulk density of 50 or 5000 kg/cu m, Flexicon has most likely handled it many times before. As a result, Flexicon can provide performance data for hundreds of products and blends, or quickly analyse any new or unusual materials. As importantly, Flexicon can determine how these materials affect, and are affected by, upstream and downstream equipment across all industries in which bulk material is processed:

- **CHEMICAL PROCESSING**
  - –Industrial and Agricultural Chemicals
  - –Paint and Allied Products
  - –Pharmaceutical and Nutraceutical Products
  - –Plastic and Rubber
  - –Soaps, Cleaners and Toiletries

- **FOOD PROCESSING**
  - –Bakery Products
  - –Beverages
  - –Canned, Frozen and Preserved Fruits and Vegetables
  - –Chocolate and Cocoa Products
  - –Coffee and Tea
  - –Dairy Products
  - –Grain Products
  - –Meat Products
  - –Pet Food
  - –Nuts and Snack Foods
  - –Sugar and Confectionary Products

- **NATURAL RESOURCES AND AGRIBUSINESS PROCESSING**
  - –Fuel Exploration and Development
  - –Farming, including Lumber and Wood Products
  - –Metal and Non-Metallic Mining
  - –Petroleum Refining
  - –Tobacco Products

- **INDUSTRIAL AND CONSTRUCTION MATERIALS PROCESSING**
  - –Paper and Allied Products
  - –Primary and Powdered Metals
  - –Stone, Clay, Glass, Ceramic Products
  - –Textiles
  - –Wastewater/Utilities

Commonly Handled Materials

Broad Range of Material Types

Mechanical and Pneumatic Conveying Choices

Ensure top efficiency for your specific application

Flexicon offers three distinct conveying technologies, each in an unlimited range of variations, from stand-alone units to automated plant-wide systems.

While most materials can be conveyed using any of several methods, the ideal conveyor will balance the strengths and limitations of each, generalised below and at right:

FLEXICON® Flexible Screw Conveyors

(details page 6)

Move the widest range of bulk materials short to medium distances in low to medium volumes

- Convey free-flowing and difficult-to-handle materials that pack, cake, seize or smear
- Prevent separation of blends
- Conveyor routing at any angle, through small holes in walls or ceilings
- Only one moving part contacts material
- Fast disassembly, thorough cleaning
- Stationary or mobile units, including tilt-down models
- Economical to purchase, install, operate and maintain
- Single or multiple discharge points
- Minimal power usage

FLEXI-DISC® Tubular Cable Conveyors

(details page 10)

Move fragile bulk foods and non-foods gently short to long distances in low to medium volumes

- Discs slide materials gently through smooth stainless steel tubing
- Prevent separation of blends
- Durable discs in 100 and 150 mm diameters
- Single or multiple inlets/outlets can be removed/relocated and the cable-disc circuit lengthened/shortened/re-routed
- Minimal power usage
- Evacuates material

PNEUMATI-CON® Pneumatic Conveying Systems

(details page 14)

Move free-flowing materials short to long distances in low to high volumes

- Single-point "up-and-in" installations to cross-plant systems with automated controls
- Positive pressure and vacuum dilute phase systems
- Wide capacity range—feed small packaging lines to silos and railcars
- Single or multiple inlet and discharge points
- Total evacuation of supply vessel and the conveyor line

Your final selection should hinge on each conveyor's advantages relative to your specific process, and on the results of conveying your actual material in full-scale test laboratories (page 34).

For large-scale conveying systems integrated with new or existing upstream or downstream equipment, also see Engineered Systems (page 29) and Weigh Batching Systems (page 30).

Flexicon flexible screw, tubular cable, and pneumatic conveying systems offer distinct differences in performance relative to specific application requirements. Since many plants convey a variety of bulk materials in a range of capacities over varying distances, a combination of pneumatic and mechanical conveying is often recommended to maximise overall performance and return on investment.

CONVEYOR CHARACTERISTICS	CHECK YOUR REQUIREMENTS	FLEXIBLE SCREW CONVEYORS	DILUTE PHASE POSITIVE-PRESSURE PNEUMATIC CONVEYORS	DILUTE PHASE VACUUM PNEUMATIC CONVEYORS	TUBULAR CABLE CONVEYORS
Short distances		■		■	■
Medium distances		■	■	■	■
Long distances			■	■	■
Lowest initial cost		■			
Lowest energy consumption		■			■
Indirect conveyor routing required			■	■	■
Flexibility of conveyor routing		■			
Simplest installation		■			
Multiple material sources			■	■	■
Multiple material destinations		■	■	■	■
Mobile units		■		■	
Evacuation of material from conveying system			■	■	■
No separation of blends		■			■
Convey directly from barrel or hopper				■	
Materials that pack, cake or smear		■			
Heat-sensitive material		■		■	■
High temperature material		■	■		
Ultra-high temperature destination			■		
Extreme material in-feed rate fluctuation			■	■	■
Contamination-sensitive material		■	■	■	■
Hazardous material		■		■	■

Flexicon® Flexible Screw Conveyors

Move virtually any free-flowing or non-free-flowing bulk material

Flexicon flexible screw conveyors offer efficiency and versatility, conveying bulk materials ranging from large pellets to sub-micron powders—both free-flowing and non-free-flowing—including difficult-to-handle products that pack, cake, seize, fluidise, plug, or smear, with no separation of blends.

The only moving part contacting material in a Flexicon flexible screw conveyor is the rugged flexible screw which is driven by an electric motor. As it rotates, the screw propels material and self-centres within the conveyor tube, providing constant clearance between itself and the tube wall. This simple design does not require the internal bearings, seals and numerous moving parts found in bucket elevators and rigid auger conveyors—parts that can add initial cost, require maintenance, wear out, breed contamination and/or break down.

Enclosed tube prevents contamination

A Flexicon flexible screw conveyor is totally enclosed, dust-free, and mess-free, preventing contamination of your bulk products and plant environment, while preserving the moisture and temperature levels of materials being conveyed.

Compare the smooth interior surfaces of a Flexicon flexible screw conveyor with potential contamination sources found in other conveyors, and you may specify the Flexicon flexible screw conveyor on the basis of product purity alone.

Gentle material handling and blending

Flexicon flexible screw conveyors can handle your materials gently, because the flexible screw self-centres as it rotates. This can provide ample clearance between the screw and tube wall to prevent grinding, crushing, and other product damage.

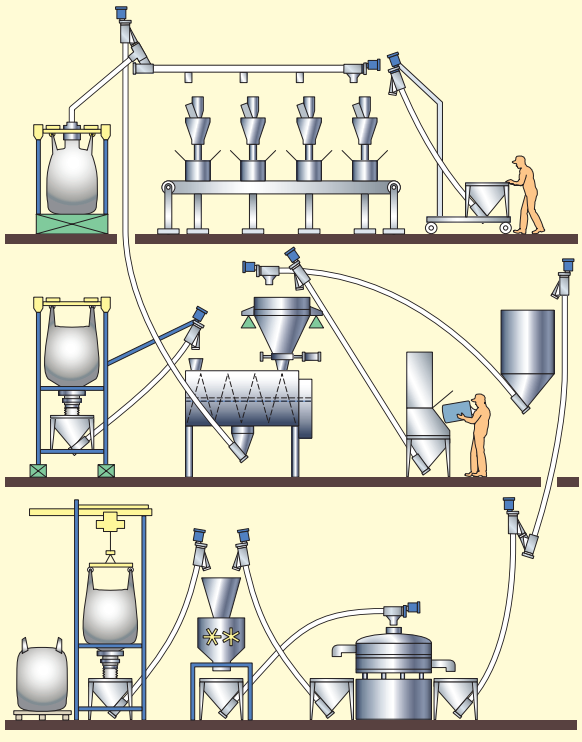
In addition, the gentle rolling action created by the screw prevents the separation of blends throughout the entire length of the conveyor.

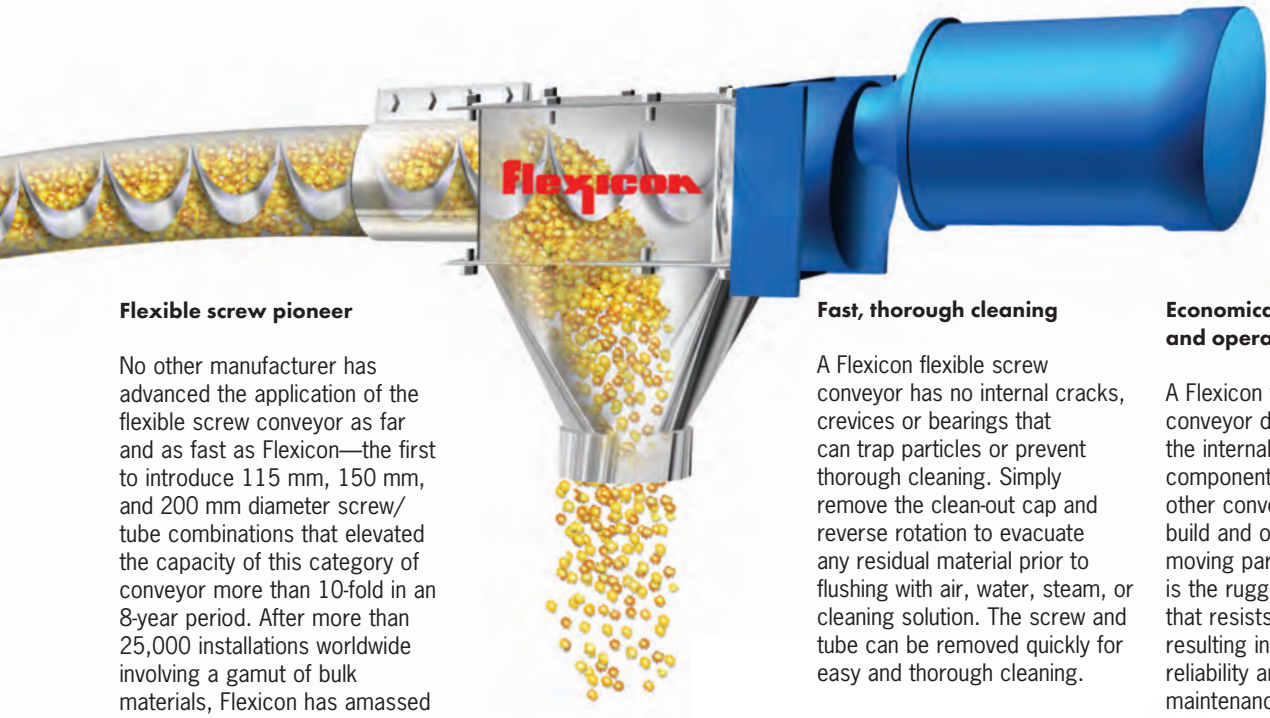
Convey in any direction

Whereas many conveyors have limited angles of incline and/or straight-only conveying paths, Flexicon flexible screw conveyors can move material vertically, horizontally, or at any angle—over, under, or around obstructions, through small holes in walls or ceilings.

QUICK SHIP

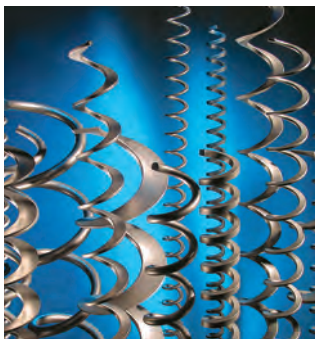
CONVEY WITH CONFIDENCE™





Flexible screw pioneer

No other manufacturer has advanced the application of the flexible screw conveyor as far and as fast as Flexicon—the first to introduce 115 mm, 150 mm, and 200 mm diameter screw/tube combinations that elevated the capacity of this category of conveyor more than 10-fold in an 8-year period. After more than 25,000 installations worldwide involving a gamut of bulk materials, Flexicon has amassed a wealth of performance data on flexible screws—many of which have been engineered, machined and formed to Flexicon specifications. To you, it means that Flexicon has most likely solved your problem in the most efficient and cost-effective manner possible—or can do so as a matter of routine.



Flexicon stocks an unequalled selection of standard and custom flexible screws to match the flow characteristics of each bulk material, yielding the greatest conveying efficiency.

High reliability, low maintenance

A Flexicon flexible screw conveyor has no internal bearings, seals, buckets or other potentially problematic components to wear, break down, or require maintenance. The only moving part contacting material is a rugged flexible screw which resists wear and fatigue, and is driven by an electric motor above the point at which material exits the conveyor.

Even under a full load of moist, dense product—depending on application parameters—a Flexicon flexible screw conveyor can start and stop repeatedly with no binding or damage to the unit. The result is a conveyor without load limitations that runs dependably, boosting productivity while cutting maintenance.

Fast, thorough cleaning

A Flexicon flexible screw conveyor has no internal cracks, crevices or bearings that can trap particles or prevent thorough cleaning. Simply remove the clean-out cap and reverse rotation to evacuate any residual material prior to flushing with air, water, steam, or cleaning solution. The screw and tube can be removed quickly for easy and thorough cleaning.

To suit your cleanliness requirements, all Flexicon flexible screw conveyors are available in carbon steel with durable industrial finishes, or in stainless steel with industrial or sanitary finishes. (See “Sanitary” page 28).

Volumetric feeding conveyors

Flexicon flexible screw volumetric feeding conveyors provide simultaneous metering and conveying of bulk solid products. The units are equipped with variable speed drives and hoppers with flow promotion devices for continuous feeding of both free- and non-free-flowing materials.

Economical to purchase, install and operate

A Flexicon flexible screw conveyor does not require the internal and external components that can make other conveyors expensive to build and operate. The only moving part contacting material is the rugged flexible screw that resists wear and fatigue, resulting in extraordinary reliability and minimal maintenance.

Because the screw and tube are flexible, and can be routed easily in any direction, the intake and discharge can be positioned where you need them, in situations that would be difficult, costly or impossible to satisfy with other conveyors.

High capacity flexible screw conveyor with downspout removed to demonstrate flow of material.

Mobile and custom configurations

All Flexicon flexible screw conveyors are available on castor-mounted frames with conveyor support masts for in-plant mobility, reducing the need for multiple stationary units.

Both mobile and stationary units are readily customised using interchangeable screws, conveyor tubes, drive motors, hoppers, flow-promotion devices, sensors, controllers, and other components to satisfy the most diverse and demanding end-use requirements.

Multiple discharge point systems

Horizontally-oriented Flexicon flexible screw conveyors can feed multiple packaging machines, moulding machines, and other process equipment. The system can convey bulk material over short to medium distances, feed multiple discharge points selectively, or top off all points on a timed cycle through manual or automatic slide gate valves.

Divergent angles of Flexicon's high-flow hopper design reduce the ability of non-free-flowing materials to establish a bridge between the hopper sidewalls, instead causing material to topple and flow toward and down the steep backwall, increasing the flow of bulk materials while decreasing residual material in the hopper.

Flexicon offers a multitude of mechanical and pneumatic hopper accessories to promote the flow of poor-flowing or non-free-flowing materials. This hopper features dual agitators with interlocking paddles that de-agglomerate bulk material, promoting void-free charging of mechanical conveyor intake adapters.

QUICK SHIP

Flexicon's Low Profile Flexible Screw Conveyor positions the drive motor at the inlet end of the conveyor tube, allowing the discharge end to fit within limited headroom areas often encountered above weigh hoppers or other receiving vessels.

BEV-CON™ Conveyors

Handle difficult-to-convey bulk materials

BEV-CON™ flexible screw conveyors handle powder and bulk materials that tend to pack, cake, smear, plug, fluidise or separate. The BEV-CON design also makes it well suited for the conveying of products that tend to break or crumble.

Materials suited to the special capabilities of a BEV-CON conveyor range from sub-micron powders to large pellets, and include:

- **FOODS (Human and Animal Consumption, Dairy and Non-Dairy Products, Beverages)**
  - –Cake Mixes
  - –Soup, Bouillon and Gravy Mixes
  - –Cocoa Powder
  - –Cheese
  - –Candy and Nuts
  - –Milk Powder
  - –Dehydrated, Frozen or Raw Fruits
  - –Pasta Elbows
  - –Dehydrated, Frozen or Raw Vegetables
  - –Animal Feed
  - –Dog and Cat Food
  - –Hop Pellets
  - –Spices
- **NON-FOODS (Organic and Inorganic Chemicals, Pharmaceuticals, Household Products, etc.)**
  - –Titanium Dioxide
  - –Carbon Black
  - –Calcium Carbonate
  - –Powdered Lime
  - –Crumb Rubber
  - –Detergent Powders
  - –Sulphur
  - –Talc
  - –Zinc Oxide
  - –Wax Pellets
  - –Glue Pellets
  - –Clays
  - –Pigments

Versatile configurations conform to your application

BEV-CON units have a straight conveyor tube which is generally supported by attaching the drive/discharge end to an overhead joist, tank rim or any other solid structure.

The conveyor tube may be routed through small openings in walls or ceilings. BEV-CON conveyors are also available on frames with masts and castors for in-plant mobility.

A wide variety of conveyor tubes, drive motors, hoppers, and bag dump dust collectors, in a range of sizes, shapes and materials, enables Flexicon to custom build a BEV-CON conveyor to your specific requirements.

BEV-CON conveyors are available in carbon steel with durable industrial finishes, or stainless steel in industrial or sanitary finishes.

This BEV-CON conveyor is equipped with a highly specialised flexible screw matched to material characteristics and other application requirements.

Moist, sticky materials

Friable materials

Materials that pack, cake, smear or plug

BEV-CON Conveyors can transport difficult-to-handle bulk materials vertically, horizontally or at any angle. This low-incline, mobile configuration allows dust-free connections to upstream as well as downstream equipment.

CONVEY WITH CONFIDENCE™

FLEXI-DISC® Tubular Cable Conveyors

Handle friable materials gently, efficiently, dust-free

FLEXI-DISC® Tubular Cable Conveyors gently slide bulk materials through smooth stainless steel tubing using low-friction polymer discs attached to stainless steel cable. The discs and cable are driven by a wheel at one end of the circuit, and put under tension by a wheel at the other end.

Material Inlet Adapters below Drum Tipper and Bulk Bag Discharger promote controlled material flow.

Innovative Automatic Cable Tensioner (above) is more compact than conventional units, and offers simple single-point tension adjustment with convenient inspection window.

This design allows single or multiple inlets and outlets, and the routing of conveyor tubing vertically, horizontally or at any angle, through small holes in walls or ceilings.

These systems can source material from multiple plant locations, and deliver it selectively to storage vessels, packaging machines and/or downstream process equipment. Because components are modular, inlets and outlets can be added, removed or relocated, and the circuit lengthened, shortened or re-routed as needs change.

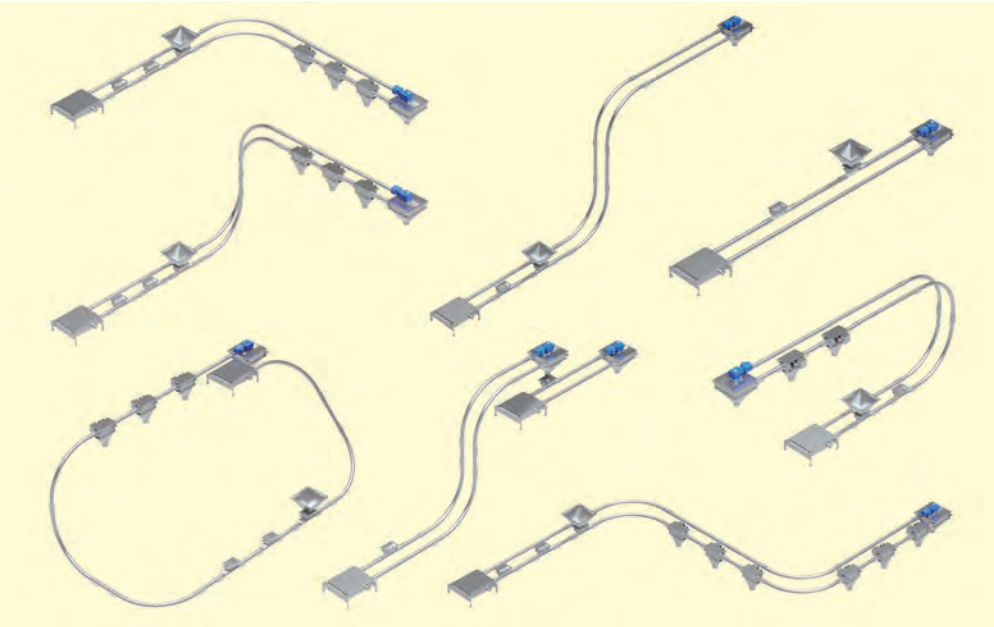
Available as stand-alone systems, or as engineered, fully automated systems integrated with new or existing process equipment.

Conveyor Features

- Gentle conveying of friable materials containing particles of dissimilar sizes, shapes, and bulk densities, with no separation of blended materials
- Transfers material from single or multiple inlets to single or multiple outlets (ideal for packaging lines)
- Modular components allow changes in conveyor routing, length and the number and position of inlets and outlets
- Low power requirements per volume of material conveyed
- Air-free conveying eliminates need for blowers and filtration equipment
- Maintains temperature and moisture levels of material being conveyed
- Enclosed system contains dust, prevents contamination
- Stainless steel components finished to food, pharmaceutical or industrial standards
- Evacuates material, minimising waste and facilitating rapid cleaning

CONVEY WITH CONFIDENCE™

System Components



Conveyor configurations range from basic systems with one material inlet and one discharge, to systems routed in several directions over hundreds of metres, with multiple material inlets and outlets as shown in the examples above.

Sanitary Systems

FLEXI-DISC Conveyors are fully enclosed, preventing contamination of the product and plant environment. At the end of a conveying cycle, the discs evacuate the conveyor tubing of material, virtually eliminating wasted product and facilitating rapid, thorough sanitising.

Sanitary specifications include discs of engineering polymers moulded directly to polymer-coated or uncoated 304 or 316 stainless steel cable.

All tubing, material inlets, material outlets and ancillary metallic components are of 304 or 316 stainless steel with continuous welds ground and polished to food, pharmaceutical or industrial standards.

Cable, Discs and Tubing

The FLEXI-DISC® Cable-Disc Assembly is highly engineered and thoroughly proven to simultaneously deliver unsurpassed efficiency, extreme durability and ultra-gentle product handling.

Discs are available in a range of designs and high-strength engineering polymers to suit a broad variety of materials. The discs are designed for smooth passage through bends in the tubing circuit, and with clearances to the tube wall designed to eliminate or minimise product degradation.

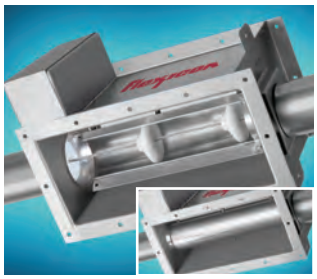
Low friction surfaces allow the discs to glide efficiently within the smooth stainless steel tubing, while minimising product hang-up and allowing easy cleaning.

The FLEXI-DISC Cable is offered in stainless steel and polymer-encapsulated stainless steel.

FLEXI-DISC Straight Tubing, Elbows and Couplings are offered in 304 or 316 stainless steel finished to industrial or sanitary standards.

Clear Inspection Tubing can be located in any straight run of tubing to visually monitor conveyor performance.

Offered in 100 and 150 mm diameters, FLEXI-DISC Cable-Disc Assemblies are available to suit a broad range of applications.

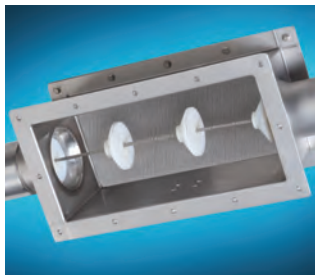


Tubular Discharge Valve in open position (top) and closed position (inset).

Inline Tubular Discharge Valves

Inline Tubular Discharge Valves enable conveyor circuits to dispense material dust-free at one or multiple locations through round spouts for connection to a flexible downspout, or flanged outlets for connection to process or packaging equipment. Tubular Discharge Valves contain a U-shaped trough rotated by a pneumatic actuator, allowing complete material discharge at a mid-point of the conveyor, or total carry-over to a downstream outlet. With the trough in the downward (open) position, material discharges fully. Rotated 180° to the upward (fully closed) position, material passes through the discharge valve.

Materials ideally suited to FLEXI-DISC® conveyors include virtually all dried beans, cereals, coffees, dried fruits, frozen vegetables, grains, nuts, pet foods, seeds, snack foods, dried spices, teas, and other fragile/friable food products. Typical non-foods include prills, pelletised products, and dried plant products such as tobacco or hemp.



Inline Full-Flow Discharge can serve as the only, or the final discharge.

Inline Full-Flow Discharges

Inline Full-Flow Discharges are devoid of valves and actuators, providing an unrestricted, final discharge through a flexible downspout or a flanged outlet of process or packaging equipment. An air knife can be employed in Inline Full-Flow Discharges to dislodge material from the cable and discs.

Automatic Cable Tensioner keeps cable and disc assembly taut.

Automatic Cable Tensioner

The Automatic Cable Tensioner contains a wheel that reverses the direction of the cable while keeping it taut throughout the conveyor circuit. This ultra-compact, simplified design is smaller than conventional units, and allows easy viewing of the Tension Inspection Window.

Brush Box dislodges residual material from cable and discs automatically.

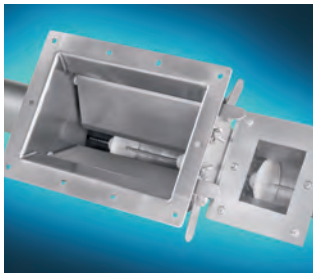
Brush Box

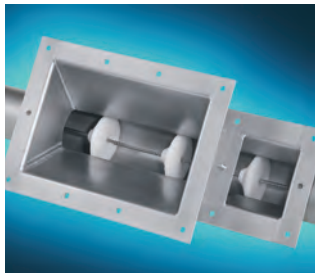
Brush Boxes contain one or two (shown) pairs of cylindrical brushes that converge at the centreline of the cable. Discs pass through the brush box and deflect the stiff bristles, dislodging any residual material adhered to the cable and disc assembly.

Drive System shown with optional discharge cone.

Drive System

The Drive System rotates a drive wheel which changes the cable's direction of travel by 180° and circulates the cable and discs at relatively slow speed through the circuit. With optional discharge cone (shown) it can also serve as the only discharge point, or as the final discharge.





Metered (above) and Non-Metered (right) Inlet Adapters are offered with universal flanged inlets for connection to flanged outlets (or downspouts) of bag dump stations, bulk bag dischargers, silos or other material sources.

Metered Inlet Adapter

The Metered Inlet Adapter is equipped with dual adjustable metering gates that are infinitely adjustable from fully-opened to fully-closed using external locking levers, controlling the rate at which material enters the conveyor tube. The target fill rate of the conveyor can additionally be controlled by increasing or decreasing the speed of the cable and disc assembly.

Non-Metered Inlet Adapter

Non-metered Inlet Adapters are employed where incoming material is fed by an upstream process at rates appropriate for the size and speed of the FLEXI-DISC conveyor.

PNEUMATI-CON® Dilute Phase Pneumatic Conveying Systems

Flexicon PNEUMATI-CON® dilute phase pneumatic conveying systems range from single-point "up-and-in" installations to cross-plant systems with multiple pick-up and discharge points and automated controls, satisfying an exceptionally wide range of bulk conveying applications. All are custom-engineered and fully integrated with other Flexicon equipment and systems, and your new or existing process.

PNEUMATI-CON dilute phase pneumatic conveying systems move bulk materials that are suspended in an air stream that is introduced by a positive pressure blower upstream of material intake points, or by a vacuum pump that removes air from the system downstream of material discharge points. Material is separated from the conveying air at the use point, then discharged on a batch basis via butterfly or slide gate valves, or continuously via rotary airlock valves.

Positive pressure systems

Positive pressure dilute phase pneumatic conveying systems are typically employed to convey bulk materials from a single source to one or multiple destinations, over longer distances and with greater capacity than possible using vacuum systems.

These systems utilise a positive displacement blower with single or multiple downstream material entry points, each of which meters product into conveying lines by means of a rotary airlock valve that maintains the pressure differential between the ambient atmosphere and that of the conveying line. Material and air blown through the line exit at single or multiple use points where they are separated by means of a filter receiver or cyclone separator, or fed directly into process vessels that are vented to downstream dust collection devices.

Pressure systems offer higher efficiency than vacuum systems, can convey over longer distances, and can blow directly into process and storage vessels without the use of a rotary airlock valve.

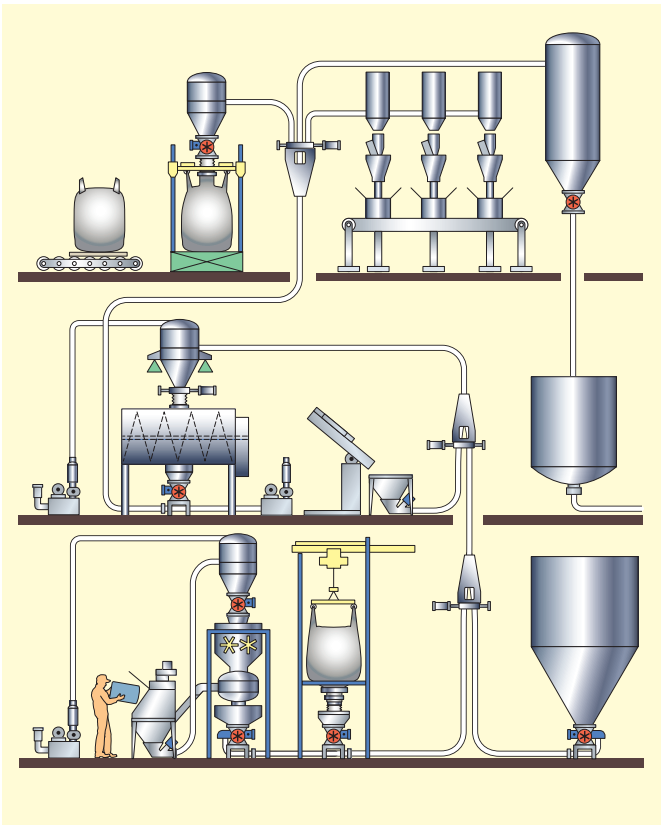
Vacuum systems

Vacuum dilute phase pneumatic conveying systems are generally employed for transporting material from multiple sources such as storage vessels, process equipment, trucks and railcars, to individual or multiple destinations. Unlike positive pressure systems, vacuum systems allow easy pick-up of materials from open containers using wands, and do not impart heat to the material. Since vacuum systems offer superior leak containment, they are often specified on the basis of cleanliness, particularly when handling hazardous materials.

Negative pressure is created by a positive displacement vacuum pump located at the downstream end of the system.

Material typically enters the system via upstream rotary airlock valves, hand-held pick-up wands, and non-flow-through (flood-feed) pick-up adapters, and exits the system through filter receivers or cyclone separators that separate the material from the conveying air directly above process equipment, surge hoppers, storage vessels or other discharge points.

In addition, vacuum conveying is suited to direct feeding of blenders, reactors and other enclosed process vessels that are put under vacuum by a line terminating at a downstream bag house or other dust collection device, eliminating the need for individual filter receivers or cyclone separators above each discharge point.



Easy conveyor line routing

Since conveyor lines can be routed vertically and in any horizontal direction, over short or long distances, through small holes in walls or ceilings, Flexicon PNEUMATI-CON® systems are easy to integrate into production environments in which process equipment and other obstacles often exist, while consuming minimal floor space.

Total evacuation

PNEUMATI-CON systems fully evacuate the vessel being discharged and the conveyor line itself, minimising cross-contamination of multi-ingredient systems. Complete transfer of material also ensures that individual and consolidated batch ingredients reach their destinations accurately by weight, maximising quality while minimising waste.

PNEUMATI-CON filter receivers incorporate numerous design and construction innovations offering unsurpassed separation efficiency across all capacity ranges. Low-capacity units (above) are commonly positioned above packaging lines or smaller process equipment, while medium-capacity units (right) are utilised above storage vessels and process equipment such as blenders and bulk bag fillers.

Wide capacity range

With a PNEUMATI-CON conveyor, capacity can range from several kilograms to tens of tonnes per hour, feeding any destination from small packaging lines to silos and railcars. Moreover, a PNEUMATI-CON conveyor is well suited to excessive fluctuations in feed rate, and is capable of sustained operation when underloaded.

Diversity of materials handled by one conveyor

Powders having wide ranging bulk densities, as well as flakes, pellets, capsules, tablets and other friable materials, can be handled by a single Flexicon pneumatic conveyor, providing the flexibility needed to transport multiple ingredients. (See “Materials,” page 4.)

Complete range of pneumatic system components

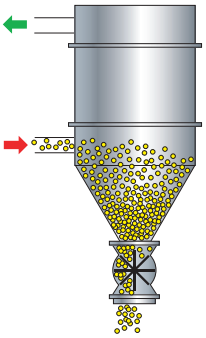
Flexicon provides any and all components necessary to configure your PNEUMATI-CON system including:

- Pressure blowers and vacuum pumps with integral sound enclosures with separate cooling fans, and easy-access maintenance points
- Rotary airlock valves in all popular designs and sizes
- Flex-tube diverters, wye-diverters, plug diverters and other line diverter configurations
- Filter receivers for low- to high-capacity applications
- Cyclone separators for low- to high-capacity applications
- Gain-in-weight and loss-of-weight batching systems
- Dust collectors and bin vents
- Controls and electrical equipment
- Hand-held pick-up wands
- Silos, day bins and other storage vessels

This Silo Vent is essentially the upper section of a filter receiver that can be mounted atop an existing silo or other large vessel, into which material can be conveyed.

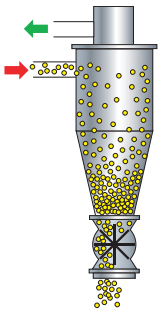
Material discharge methods

Material typically exits pressure and vacuum pneumatic conveying systems via filter receivers, cyclone separators, or fill/pass valves, or discharges directly into process or storage vessels.



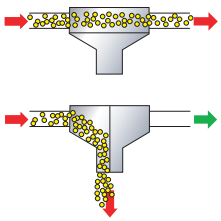
Filter Receivers

Flexicon filter receivers separate solids from the air stream using filter media and gravity, and are generally specified when materials contain smaller particles that are prone to dusting and/or when dust containment is a primary requirement. They are normally located above material use points, and employ reverse-pulse jet filter cleaning to dislodge accumulated dust from filter surfaces, allowing continuous and efficient separation of material from the air stream.



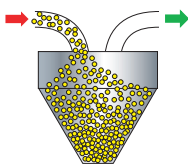
Cyclone Separators

Cyclones separate solids from the conveyor air stream using centrifugal force and gravity, and are typically specified when materials are comprised of larger particle sizes that are not prone to dusting. Auxiliary filtration can also be incorporated as a secondary means of capturing airborne solids.



Fill/Pass Valves

Fill/pass valves are commonly used to discharge material directly into individual or multiple process vessels and/or to deliver it to several destinations along a common conveying line. Downstream of the last fill/pass valve, the conveying line is normally routed to the original material source point or into a dust collection device.



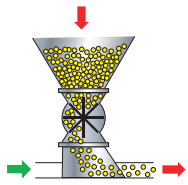
Directly Into Process Vessels

Both pressure and vacuum systems can feed material directly into blenders, reactors and other enclosed process vessels that are vented to a downstream bag house or other dust collection device, eliminating the need for individual filter receivers.

CONVEY WITH CONFIDENCE™

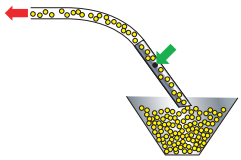
Material intake methods

Pressure and vacuum conveying systems commonly utilise rotary airlock valves to introduce material to the air stream. Hand-held wands and non-flow-through (flood-feed) pick-up adapters can be utilised with vacuum systems.



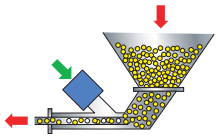
Rotary Airlock Valves with Flow-Through Pick-Up Adapters

Rotary airlock valves with flow-through pick-up adapters can be utilised in pressure and vacuum systems for both controlled metering of material into the conveying system, and maintaining the pressure differential between the conveying system and ambient atmosphere.



Wands

Hand-held pick-up wands plumbed to vacuum conveyor lines with flexible hose are used to vacuum material from hoppers, drums, paper bags, barrels or other containers.



Non-Flow-Through Pick-Up Adapters

Material can be introduced into vacuum conveyor lines via non-flow-through (flood-feed) pick-up adapters, which are typically used at pick-up points where lower volumes of material are fed manually.

Material pick-up points, clockwise from top left, include hand-held pick-up wand, inline rotary airlock with flow-through adapter, non-flow-through pick-up adapter and initial pick-up inline rotary airlock with flow-through adapter.

Enclosed system prevents contamination

Totally enclosed and dust-free, a PNEUMATI-CON® conveying system prevents contamination of the product and plant environment, allowing safe transfer of contamination-sensitive materials including dusty and hazardous materials.

High reliability and ease of maintenance

Flexicon PNEUMATI-CON systems feature easy-to-maintain filter receivers with access doors and inspection ports, as well as rotary airlock valves with optional rotor support bars for easy access, cleaning and inspection.

Mobile and custom configurations

Self-contained Flexicon PNEUMATI-CON conveying systems complete with feed hopper and/or pick-up wand, blower unit, filter receiver and control package, are available pre-engineered and configured on castor-mounted frames for in-plant mobility.

Designed, constructed and finished to industrial and sanitary standards

PNEUMATI-CON conveying systems are available in carbon steel with durable industrial finishes, or stainless steel finished to standards required for industrial, food, dairy and pharmaceutical applications. Available upgrades include quick-access and quick-disconnect features.

This modular vacuum receiver features a rugged clamp-together design that facilitates rapid disassembly for filter maintenance and cleaning. Whereas conventional filter receivers employ multiple smaller elements, this design employs a single, large diameter filter cartridge, and offers an ideal solution for low-throughput-rate, short-distance pneumatic conveying applications.

Unlike filter receivers, cyclone separators require no filters to separate solid particles from the gas stream, instead relying on cyclonic action alone. An air stream containing material enters the separator at a tangential angle and is spun rapidly, creating a circular flow that imparts centrifugal force to the particles which strike the wall of the cyclone and fall through a bottom outlet, into a process vessel.

BULK-OUT® Bulk Bag Dischargers

Dust-free loading, untying, retying and removal of bulk bags

Broad model range satisfies general to specific requirements

Flexicon BULK-OUT® Bulk Bag Dischargers are offered in numerous frame configurations for loading and unloading of bulk bags using a powered hoist and trolley or a forklift. Specialised models include split frames for forklift loading of bags in low headroom areas, half frames for suspending bags during discharge using a forklift, continuous loss-of-weight dischargers for uninterrupted feeding directly from bulk bags, and other application-specific designs.

Revolutionary advances overcome limitations of outdated designs

Just as bulk bags changed the way you stored and shipped bulk material in the past, so will these bulk bag dischargers revolutionise the way you load, untie, retie, remove and collapse bulk bags in the future.

No longer must your operators reach through cramped access doors and awkward glove boxes, struggle to retie partially empty bags, clean up spillage after disconnections, dislodge materials from dead spots or flatten bags manually.

Patented SPOUT-LOCK™ clamp ring eliminates dust during untying, discharge, bag collapse and removal

The SPOUT-LOCK™ clamp ring creates a high-integrity, sealed connection between the clean side of the bag outlet spout and the clean side of the telescoping tube. This prevents contamination of the product, while eliminating the plant contamination that occurs when falling material displaces air and dust from the hopper. The clamp ring is fully accessible and manually operated using quick-release handles for rapid and safe, yet secure, bag spout connections.

Model BFF BULK-OUT® Bulk Bag Discharger

(Forklift loading)

Shown with the following options: FLOW-FLEXER™ bag activators, POWER-CINCHER™ flow control valve, SPOUT-LOCK™ clamp ring, TELE-TUBE™ telescoping tube, and hopper with non-flow-through pick-up adapter for multiple pneumatic conveying lines.

DISCHARGE EFFICIENTLY™

QUICK SHIP

Performance never before possible

You can eliminate the drawbacks of outdated designs—while dramatically improving convenience, safety and cleanliness—with Flexicon's latest generation of bulk bag dischargers. The heart of the new design is a bag spout interface that not only creates a dust-tight seal, but promotes material flow and total evacuation. It also allows easy retying of partially empty bags, and can collapse empty bags—free of spillage and dust.

*Patented **Z-CLIP™** bag strap holder allows fast, easy and secure insertion and removal of bag straps.*

Cantilevered I-beam with electric hoist and trolley allows positioning of bulk bag without the use of a forklift.

Frames are offered in carbon steel with durable industrial finishes or in stainless steel designed and constructed to industrial, food, dairy or pharmaceutical standards.

***POWER-CINCHER™** flow control valve cinches the bag spout concentrically.*

***BAG-VAC™** dust collector creates negative pressure when piped to sealed system, collapsing empty bags prior to tie-off and removal.*

***SPOUT-LOCK™** clamp ring eliminates dust during untying and discharge.*

TELE-TUBE™ telescoping tube prevents dead spots and promotes flow

The TELE-TUBE™ telescoping tube raises the SPOUT-LOCK™ clamp ring for connection to the bag spout, then lowers, applying continual downward tension. As a result, the spout is kept taut at all times, preventing excess spout material from bulging outward (creating dead pockets) or falling inward (creating flow restrictions). Works in conjunction with SPOUT-LOCK clamp ring and FLOW-FLEXER™ bag activators (see page 21) to promote material flow and total evacuation.

*Pneumatically-actuated **FLOW-FLEXER™** bag activators promote positive material flow.*

Operators are protected from falling bags by four safety frame crossmembers, and four guard plates.

Hopper is available with hinged lid for manual dumping or clamped lid (shown) for rapid wash down.

***TELE-TUBE™** telescoping tube prevents dead spots and promotes flow.*

A wide variety of hopper designs connect to processing equipment, pneumatic or mechanical conveyors.

Model BFC BULK-OUT® Bulk Bag Discharger

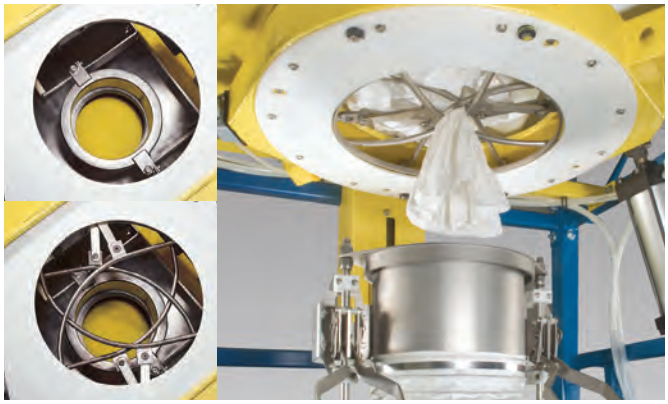
(Electric hoist and trolley loading)

Shown with the following options: FLOW-FLEXER™ bag activators, POWER-CINCHER™ flow control valve, SPOUT-LOCK™ clamp ring, TELE-TUBE™ telescoping tube, BAG-VAC™ dust collector, and hopper with adapter for flexible screw conveyor.

Total dust containment with BAG-VAC™ dust collector

The high-integrity connection between bag outlet spout and discharger creates a sealed system that can be vented through a filter sock to a central dust collection system, or to an optional BAG-VAC™ dust collector. Actuating the BAG-VAC dust collector creates negative pressure within the sealed system to collapse empty bags prior to retying, eliminating dust commonly emitted when bags are flattened manually. In addition, the BAG-VAC dust collector vacuums any particles trapped in spout creases during disconnect, eliminating the need for awkward access ports. Where absolute spillage containment is essential, an optional double wall version of the TELE-TUBE™ telescoping tube draws errant particles into the dust collector through an annular gap that encircles the bag spout seal.

Leak-proof retying of spouts with POWER-CINCHER™ flow control valve



Unlike opposing bars that pinch the spout of partially empty bags from two sides, the patented POWER-CINCHER™ pneumatically-actuated flow control valve contains a series of curved, articulated stainless steel rods that cinch the spout concentrically on a horizontal axis for easy tie-offs, and vertically in a tight zigzag pattern to prevent leakage of even the finest powders. It also resists jamming, breaking and leaking, and allows full-open discharge from bag spouts of all popular diameters.

Conventional iris valves also available

Iris valves are recommended when a sealed connection is unnecessary. Once the iris valve is closed around the bag spout, the spout can be untied, the access door closed, and the valve opened gradually to control the rate of discharge.

The Dust Containment Enclosure contains spillage and dust that can escape through seams in the bag and folds in the spout. The six-sided enclosure is equipped with an exhaust port for dust collection and a hinged door with inspection window.

This Half Frame Bulk Bag Discharger offers total dust containment at low cost by eliminating upper frame components to lift and/or position the bag, instead relying on the user's forklift or plant hoist to suspend the bag above the unit during operation.

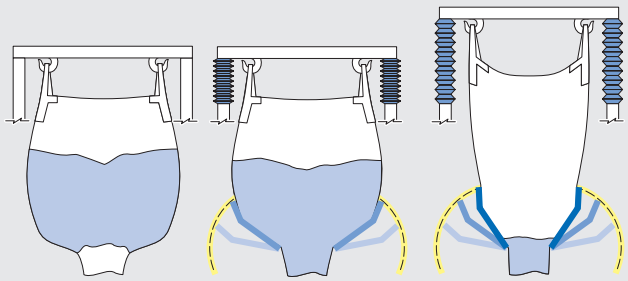
This Mobile Half-Frame Bulk Bag Unloader with multi-purpose hopper allows material to be discharged from bulk bags suspended from forklifts or hoists, manually dumped from sacks, and conveyed to equipment and storage vessels—dust free.

This BFC Series Bulk Bag Discharger is equipped with a small surge hopper that directs material into the throat of a variable speed rotary airlock feeder for volumetric or gravimetric metering into positive- or negative-pressure pneumatic conveyor lines.

Flexicon Bulk Bag Continuous Loss-of-Weight Dischargers feature an activated surge bin and flexible screw conveyor, allowing continuous loss-of-weight (gravimetric) feeding directly from bulk bags. System software switches to volumetric mode during bag changes.

Multi-purpose intake chute and manual dumping station

The Multi-Purpose Hood allows automatic discharging from bulk bags as well as manual emptying from sacks, drums and other containers. Available as an option on both BFC and BFF Series dischargers, it can operate with an optional dust collector to prevent contamination of the product and plant environment.



Poor-flowing, non-free-flowing and/or compacted materials will not fall through the bulk bag discharge spout consistently, often "rat-holing" or bridging as shown above.

At timed intervals, FLOW-FLEXER™ bag activators raise and lower opposite bottom edges of bulk bags, promoting material flow into the discharge spout.

As the bag empties, the stroke of the FLOW-FLEXER bag activators increases, raising the bottom of the bag into a steep "V" shape, while POP-TOP™ extension devices stretch the bag into a cone shape, promoting complete discharge.

This Split-Frame Bulk Bag Discharger accommodates bulk bags and—with upper frame removed—rigid bins. The removable top frame can also be lowered to the plant floor for connection and disconnection of bag loops, significantly reducing ceiling height requirements.

Round frame rails are easy to locate into receiving cups, and slide into position.

***Z-CLIP™** bag strap holders offer the fastest, most secure way to connect bag straps to the lifting frame.*

Fork tips slide easily and securely into full-length rectangular sleeves, unlike frames having separated forklifting points.

Extra-wide receiving cups and backstops maximise the operator's target area.

BFF Series BULK-OUT® Bulk Bag Discharger
(Forklift loading)

Shown with the following options: POWER-CINCHER™ flow control valve, SPOUT-LOCK™ clamp ring, TELE-TUBE™ telescoping tube, FLOW-FLEXER™ bag activators, BAG-VAC™ dust collector, Flexicon® flexible screw conveyor, load cells for automated loss-of-weight batching directly from bulk bags, and control panel with touch screen interface.

BLOCK-BUSTER® Bulk Bag Conditioners

Loosen solidified bulk solid materials

BLOCK-BUSTER® Hydraulic Bulk Bag Conditioners loosen bulk solid materials that have solidified during storage and shipment, enabling bulk bag unloaders to discharge the material through bag spouts. These conditioners are ideal for bulk bags containing hygroscopic chemicals, certain types of spice blends, heat-sensitive products, and other materials prone to solidifying to the point at which pneumatically-actuated flow promotion accessories integral to bulk bag dischargers are inefficient or completely ineffective.

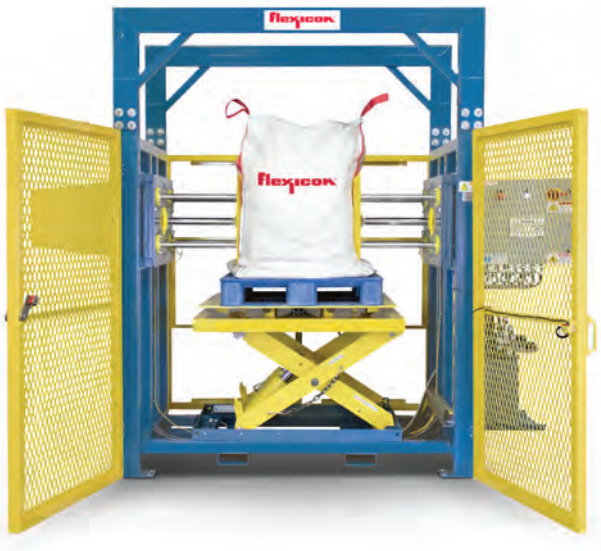
BLOCK-BUSTER® Hydraulic Bulk Bag Conditioners utilise two hydraulic rams with specially contoured conditioning plates that press opposing sides of bulk bags of all popular sizes to loosen the contents of the bag.

Stand-Alone Hydraulic Bulk Bag Conditioner

The Flexicon Stand-Alone Hydraulic Bulk Bag Conditioner is equipped with the above-mentioned hydraulic rams, as well as an optional hydraulically-actuated, variable-height turntable that allows in-frame bag rotation, and conditioning of bulk bags at varying heights.

The number and pressure of hydraulic ram actuations, the height of the turntable, and the degree of rotation are user-programmable to achieve maximum effectiveness and efficiency.

The conditioner is enclosed on four sides for operator safety and includes full-height doors that are interlocked to disallow operation of the system when



the doors are open. The controller and hydraulic pump of the system, which can be mounted on the exterior of the safety cage or remotely, require only an electrical power connection for operation.

CONDITION WITH CONFIDENCE™

QUICK SHIP

Integral Bulk Bag Conditioner-Discharger System

The Flexicon Bulk Bag Conditioner-Discharger System eliminates the time, labour and equipment needed for separate loading of bulk bags into a stand-alone conditioner. The design also consumes significantly less floor space than two separate pieces of equipment and requires less material and labour to construct, reducing initial cost.

The number and pressure of hydraulic ram actuations are user adjustable, but unlike stand-alone conditioners, the Conditioner-Discharger System utilises its electric hoist to raise and lower the bag for conditioning at varying heights.

The conditioner's controller and hydraulic pump can be mounted on the exterior of the discharger or remotely.

(See Bulk Bag Dischargers pages 18-21, for features on bulk bag discharger aspect of system.)

Flexicon® Bulk Bag Fillers

Three designs satisfy the entire range of bulk bag filling requirements without compromise

Flexicon offers three bulk bag filler configurations, each of which is engineered to deliver optimum performance across specific capacity ranges with maximum cost effectiveness.

Flexicon's patented TWIN-CENTREPOST™ filler (bottom right), satisfies low- to medium-capacity filling requirements and/or sanitary applications where frequent wash down is required.

Flexicon's latest bulk bag filling innovation is the patented SWING-DOWN® filler (page 24). Designed for medium- to high-capacity applications, this revolutionary design brings the fill head to the operator at floor level for faster, safer and easier bag connections.

The REAR-POST filler (page 25, bottom left) is intended for medium- to high-capacity applications requiring pass-through conveyors and/or powered fill head height adjustment.

Each of these designs satisfies a distinct range of bulk bag filling applications, and is available with performance enhancements to meet your individual requirements with extreme cost effectiveness. From basic, low-cost fillers to automated, high-capacity systems and everything in between, Flexicon offers precisely what you need for bulk bag filling success.

(For sanitary Bulk Bag Fillers see page 28.)

STANDARD FEATURES INCLUDE:

- Rugged TWIN-CENTREPOST, REAR-POST or SWING-DOWN configuration
- Forklift fill head height adjustment to accommodate all popular bag sizes
- Inflatable collar to hold and seal the bag inlet spout
- Pneumatically retractable bag strap hooks for quick, positive strap release
- Vent port for air displacement and dust control

OPTIONAL FEATURES INCLUDE:

- Accurate weigh scale system with automated control
- Automated vibratory densification/deaeration system to stabilise the bag
- Inflator to expand empty bag and liner, and remove creases prior to filling
- Pneumatically-actuated material flow control valve
- Custom controls for integrated material feed system
- Drum/box filling conversion kit
- Powered fill head height adjustment (REAR-POST and SWING-DOWN fillers only)
- Powered or gravity roller conveyor for bulk bag staging and removal
- Pallet-jack accessible base

Material delivery systems

Flexicon will custom engineer an automated delivery system according to your specific bulk material and process requirements. Whether your system must integrate with new or existing upstream equipment, elevate non-free-flowing materials, or prevent the surging of free-flowing materials from elevated storage vessels, Flexicon offers precisely what you need to keep your filler well fed:

- Flexible screw conveyors
- Pneumatic conveyors
- Controls and weighing systems
- Conveyor and feeder inlet adapters to interface with material sources
- Surge bins and other storage vessels for overhead material delivery

Patented TWIN-CENTREPOST™ Bulk Bag Filler

Flexicon TWIN-CENTREPOST Bulk Bag Fillers feature a patented frame design that is exceptionally simple, strong and stable, and economical to fabricate. Recommended for applications requiring low- to medium-capacity filling and/or rapid, thorough wash down, it is offered in carbon steel with durable industrial coatings (shown).

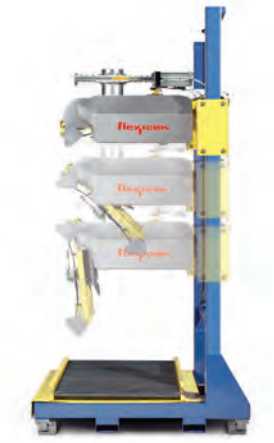
FILL WITH CONFIDENCE™

Revolutionary SWING-DOWN® Fillers

Brings fill head to operator for floor-level bag connections

Flexicon's latest innovation in bulk bag filling features a pivot-down fill head that enables the operator to connect empty bags at floor level and resume filling operations rapidly, eliminating the need to climb steps, strain to reach overhead connection points, or risk injury associated with operation of competitive bulk bag fillers.

The SWING-DOWN® filler simultaneously lowers and pivots the fill head, stopping it in a vertically-oriented position that places the bag inlet spout inflatable connection, inflator button, and four bag loop latches within one arm's length of an operator standing on the plant floor. Bringing the



fill head to the operator in a vertical position at floor level can significantly increase the safety and speed of connecting bulk bags, since the connection points of a conventional filler are beyond the reach of most operators, even when short bags are being filled. For example, the connection points for bulk bags of only 1220 mm in height are approximately 2130 mm above the floor, considering the height of a roller conveyor and the length of bag loops in addition to the height of the bulk bag.

An operator is connecting a bag spout to the vertically-oriented bag connection frame at floor level.

As the entire fill head rises, the bag connection frame is pivoting to a horizontal position.

The bag connection frame has pivoted to horizontal position, the fill head is raised to "bag fill" position, and the bag has inflated to remove creases.

The design also eliminates the danger of repeatedly stepping onto and over roller conveyors to access rear bag hooks and spout connection collars, and of standing on the conveyor and bending over with head and arms inserted beneath operational fill head components to pull bag spouts upward over inflatable collars while reaching for bag inflator buttons.

A remote console or wall-mounted panel houses controls to raise and pivot the fill head into a locked, horizontal "fill position," automatically inflate the bag to remove creases, open a flow control valve or start a feed device, and stop the flow of material once a preset fill weight has been gained. Optional vibratory decks deaerate and densify material in the bag at preset set points to create a solid, stable bag, ready for shipment.

Once bags are filled, the controller deflates the spout connection collar, releases the loop latches, and raises the fill head to fully disengage the spout, enabling the bag to exit the filler automatically on the roller conveyor.

An innovative latch mechanism automatically resets the latch after releasing the bag loops, and re-positions it as the fill head pivots into a vertical position, enabling the latch to receive bag loops easily inserted by an operator and to re-latch automatically, securing the bag.

Combination SWING-DOWN® Bulk Bag and Drum Filler

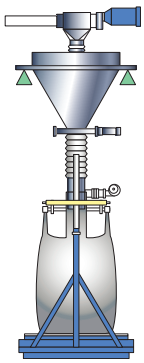
Flexicon's patented SWING-DOWN Bulk Bag Filler represents a total re-think of the bulk bag filling process, allowing operators to connect empty bags at floor level. The model above is equipped with an optional swing-arm-mounted drum filling chute which automatically rotates to deliver material to all four drums on a pallet.

REAR-POST and TWIN-CENTREPOST™ Fillers

Models to fulfill the lowest to the highest capacity requirements

Basic units to fully automated, high capacity, feeder/filler systems

For fast, accurate, and stable weigh-filling of small to large volumes of free- and non-free-flowing bulk materials, Flexicon bulk bag fillers are offered in two configurations: with load cells which measure weight gain of the bulk bag filler (below) and with weigh hoppers suspended above the bag filler (right) allowing simultaneous recharging of the hopper and replacement of the bulk bag to achieve high filling rates.



BASIC FILLER for lighter-duty minimises cost, yet offers an inflatable bag spout seal and feed chute dust vent port, plus optional performance features.

Forklift fill head height adjustment accommodates all popular bag sizes. Powered height adjustment also available.

Air displacement outlet for connection to filter sock, cartridge filter, or dust collector (hidden by discharge spout assembly).

Bag inflation blower removes creases and pre-shapes bag, allowing material to fill corners for maximum bag stability during shipment. (Also available with plant air connection.)

Pneumatically retractable bag hooks partially suspend bag during filling for superior bag shape, stability, and utilisation of capacity. Bag straps are released manually, or automatically upon completion of filling cycle.

Inflatable collar holds and seals bag inlet spout.

Load cells with overload protection transmit weight-gain information to the system controller.

Electric or pneumatic vibratory deaeration/ densification deck with high amplitude/ low frequency motion. Inflatable air mounts raise deck and isolate vibration.

Flexicon's Low Profile Bulk Bag Filler allows removal of loaded bags using a pallet jack, eliminating the need for a forklift.

This TWIN-CENTREPOST™ frame can be forklifted onto an all-purpose plant scale, eliminating the cost of load cells and controls.

REAR-POST Bulk Bag Filler

Flexicon REAR-POST Bulk Bag Fillers feature a cantilevered fill head that provides three-sided access preferable for "pass-through" conveying using a roller conveyor. It also offers powered fill head height adjustment as an option, allowing rapid raising and lowering of the fill head to accommodate bags of varying heights, without the use of a forklift.

Flexicon® Bag Dumping Stations

Reverse-pulse filter cleaning for continuous operation

Collect dust efficiently

Flexicon Bag Dumping Stations collect dust generated when dumping powder and bulk solids from bags, boxes, drums, and other containers, and return the material to the hopper.

The system reduces material waste and eliminates the need to clean a remote dust collection site, while protecting workers and preventing plant contamination.

All units feature a high-velocity vacuum fan which draws airborne dust away from the operator through two cartridge filters which are sized according to the application.

To operate, the hopper lid is opened, the vacuum fan is activated, and material is dumped through the hopper screen. Airborne dust in the vicinity of the hopper opening is drawn into the dust collector, protecting workers, preventing plant contamination, and reducing material waste.

An automatic reverse-pulse filter cleaning system employs timer-activated solenoid valves to release short blasts of compressed plant air inside the cartridge filters, causing dust build-up on the outer filter surfaces to fall into the hopper. Because the filters are blasted alternately at timed intervals, operation of the dust collection system is both continuous and efficient.

Tailored to your process

The hoppers of Flexicon manual dumping stations are available in various configurations for simplified connection to pneumatic conveyor lines, mechanical conveyors, and virtually any process equipment.

All units are available in carbon steel with durable industrial finishes, or in stainless steel in industrial or sanitary finishes.

The hoppers of Flexicon Bag Dumping Stations are offered with outlets configured for: (left to right) direct connection to process equipment, flexible screw conveyor charging adapters, tubular cable conveyor charging adapters and rotary airlock valves with flow-through adapters.

Two cartridge filters are accessed easily by removing the interior baffle, and replaced rapidly using quick-disconnect fittings.

Self-contained Bag Dump System integrates a dust collector, flexible screw conveyor and bag compactor on a skid, streamlining installation and allowing easy relocation. The entire airtight system is under negative pressure, containing dust when bags are dumped, as well as when empty bags are pushed through the chute and compacted.

TIP-TITE® Container Tippers

Sealed or open transfer of solids from drums, boxes and containers to process equipment

TIP-TITE® Tippers stop dust

TIP-TITE® Universal Drum Tipper handles drums from 114 to 208 liter. Shown with optional hopper configured with Flexicon flexible screw conveyor. Also available with hopper configured with tubular cable conveyor adapter, pneumatic pick-up adapter, or universal flanged outlet.

Flexicon TIP-TITE® Drum, Box and Container Tippers enable you to load, seal, tip and discharge containers with no dusting, bringing a new level of cleanliness and efficiency to an age-old task. A hydraulic lift automatically forms a dust-tight seal between the container lip and the discharge hood. The assembly is tipped hydraulically causing the cone to mate with a gasketed receiving ring that is fitted to existing process equipment or the lid of an optional Flexicon hopper, eliminating the need for connecting sleeves and clamps.

All models are available in carbon steel with durable industrial finishes, or in stainless steel with material contact surfaces finished to industrial, food or pharmaceutical standards. All can discharge directly into process equipment or into hoppers equipped with outlets for connection to Flexicon mechanical or pneumatic conveyors, or to other process equipment.

TIP-TITE® Box/Container Tipper handles boxes up to 1220 mm W x 1220 mm D x 1120 mm H.

TIP-TITE® High-Lift Box/Container Tipper (shown) and Drum Tipper discharge into vessels 1830 to 3050 mm high, dust-free.

Open Chute Tippers offer simplicity, ease of cleaning

Flexicon Open Chute Box/Container Tipper handles containers up to 1220 mm W x 1220 mm D x 1120 mm H. Shown with optional hopper configured with Flexicon flexible screw conveyor. Also available with hopper configured with tubular cable conveyor adapter, pneumatic pick-up adapter, or universal flanged outlet.

Flexicon Open Chute Drum, Box and Container Tippers offer an economical method of discharging from containers when dust generation is not a concern. The lift assembly is raised hydraulically until material flows down the chute, into the receiving vessel. Smooth, wide-diameter product chutes allow unobstructed discharge of free- and non-free-flowing products including large agglomerates. Fully accessible, crevice-free surfaces allow rapid, thorough cleaning.

All models are available in carbon steel with durable industrial finishes, or in stainless steel to food, pharmaceutical and industrial standards.

Open Chute Drum Tipper offers a low cost method of discharging free- and non-free-flowing bulk solids when dust generation is not a concern. Discharges directly into process equipment or optional hoppers equipped with conveyor adapters or universal flanges.

Sanitary Construction and Finishes

Virtually all Flexicon equipment is available constructed and finished to meet food, dairy and pharmaceutical requirements of industry associations and governmental agencies worldwide.

Flexicon sanitary equipment can be constructed almost entirely of 304 or 316 stainless steel and finished to Flexicon sanitary standards, or customer-specified requirements. Product contact areas include continuous welds, ground smooth and flush with adjoining walls, with available finish levels up to mirror finish.

Wash down control enclosures and motors allow fast, thorough wash down using steam, cleaning solutions and high pressure water, with no adverse effect on equipment.

Sanitary designs

Beyond requisite sanitary construction and finishes, Flexicon equipment offers innovative design features—many patented—that enable food, dairy and pharmaceutical processors to minimise wash down time, eliminate cross-contamination between changeovers, eliminate plant contamination and verify cleanliness—and do so rapidly, efficiently and safely.

Sanitary Flexible Screw Conveyors are totally enclosed, preventing plant and product contamination. The inner screw connects to the drive motor beyond the material outlet, eliminating material contact with bearings. Tool-free disassembly.

Open-channel stainless steel frames of BULK-OUT® Bulk Bag Dischargers are devoid of cavities or recesses where bacteria, mould and other contaminants can breed, allowing rapid, thorough wash down, reducing the risk of cross-contamination and providing unobstructed inspection.

BULK-OUT® Bulk Bag Dischargers create a dust-tight connection between the clean sides of the bag spout and the equipment. Discharger frame, POWER-CINCHER™ flow control valve, SPOUT-LOCK™ clamp ring and TELE-TUBE™ telescoping tube available.

Sanitary Weigh Batching Systems and other engineered systems integrate sanitary equipment and employ dust-tight connections, preventing product and plant contamination. The sanitary bulk bag discharger, flexible screw conveyors and weigh hopper of this batching system allow rapid, thorough wash down.

Sanitary SWING-DOWN® Bulk Bag Fillers offer stainless construction with continuous ground and polished welds, and a fill head that pivots away from its support structure, providing unrestricted access for high productivity and thorough wash down.

Sanitary TWIN-CENTREPOST™ Bulk Bag Fillers provide a dust-tight, inflatable bag spout seal, a feed chute air-displacement port for dust-free filling, and four-sided access for easy connection of bag straps and bag spout, and rapid wash down.

Sanitary Bag Dump Stations with optional dust hoods on rocker arms raise the hood for easy separation and wash down of the gasketed seam—and for removal and wash down of the interchangeable dump screens. Dust collection prevents contamination of personnel and plant environment.

Sanitary TIP-TITE® Drum Tippers allow loading, sealing, tipping and discharging of drums with no dusting by forming a dust-tight seal between a drum discharge cone and a gasketed receiving ring fitted to existing process equipment or the lid of a hopper.

Sanitary TIP-TITE® Box/Container Tippers form a dust-tight seal between the container rim and gasketed discharge chute. Finished to food and pharma standards, these units provide unrestricted access for rapid, thorough wash down.

Large Scale Bulk Handling Projects

Engineering, manufacturing and management

Flexicon's Project Engineering Division (PED) designs and automates large scale bulk handling systems of every type and size, including those that source bulk materials from multiple interior and exterior locations, move materials at high rates while achieving precise batch weights, and integrate a diversity of process equipment from multiple manufacturers.

Drawing from over 50 years of experience and 25,000 installations, the Project Engineering Division can assume single-source responsibility for your entire project, taking the risk and uncertainty out of coordinating multiple suppliers, while backing all Flexicon components with a Lifetime Performance Guarantee.

Flexicon can work independently, with the engineering firm managing your entire expansion, or directly with your in-house engineering team, adhering strictly to your standards, documentation requirements and timelines.

A senior-level Project Manager will serve as your single point-of-contact, assisting in all phases of development from order placement through delivery and commissioning, providing all essential services, a portion of which include:

- Working with Flexicon engineering teams to evaluate your bulk material(s), plant layout, throughput rates, residual product limitations, cleanliness, noise limitations, access, cost, cycle times and other parameters
- Providing competitive price quotations including CAD files that integrate equipment manufactured by Flexicon and others, with new or existing equipment in your plant
- Confirming the performance of your system in full-scale test laboratories configured to replicate your process, using your actual material
- Maintaining efficient communications between your team and Flexicon's mechanical and electrical engineers to meet timelines
- Providing technical assistance to third party organisations you determine
- Working with Flexicon's quality control department throughout the project to ensure your total satisfaction
- Streamlining start-up including installation supervision, mechanical equipment commissioning, control system commissioning, site acceptance testing (S.A.T.), and operator training

Flexicon management and engineering teams assist you through every phase of development, streamlining your communications.

Flexicon designs and automates large scale bulk handling systems that source materials from multiple interior and exterior locations for weigh batching and/or delivery to any downstream process.

Flexicon®
PROJECT ENGINEERING DIVISION

Flexicon® Weigh Batching and Blending Systems

Virtually any bulk material, from any upstream source, to any downstream destination

Whether you are sourcing material from bulk bags, silos, manual dumping stations, process equipment or all of the above, weigh batching one ingredient or 50, blending your recipe, filling containers, and/or delivering it to process vessels, packaging lines, or any other destination, Flexicon has the comprehensive selection of equipment you need for a total weigh batching solution.

From individual loss-of-weight bulk bag weigh batch dischargers to automated gain-in-weight batching/blending systems integrated with your upstream and downstream equipment, Flexicon offers you the entire range of specialised equipment—and the engineering talent—required for a smooth start-up and efficient performance.

Equally as crucial to your weigh batching success is the proven ability of Flexicon equipment to move your material—at high rates for fast batching cycles and at steady trickle-feed rates for highly accurate weighments—and to deliver recipes with no separation of blended materials and no exposure to potential contamination.

Whether your ingredients are free-flowing pellets, powders that pack, bridge or smear, materials that fluidise, or blends prone to separation, Flexicon can move them positively, weigh them accurately, and deliver them in prime condition.

BATCH WITH CONFIDENCE™

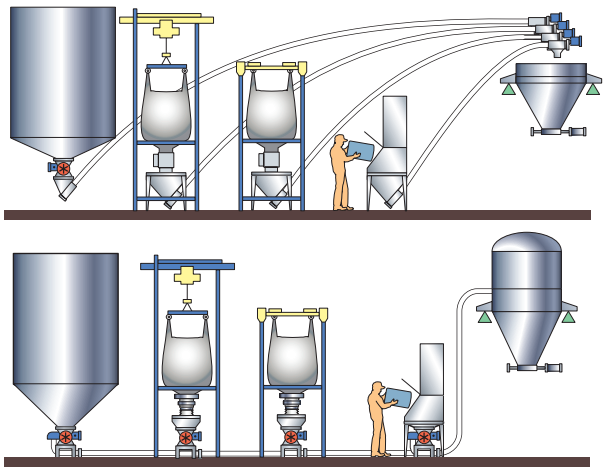
Flexicon's Self-Contained, Gain-in-Weight Batching and Blending System conveys bulk ingredients from multiple upstream sources, weigh-batches, blends and discharges the material into a surge hopper, and transports it to a TWIN-CENTREPOST™ Bulk Bag Filler. The system is offered with Flexicon Flexible Screw Conveyors (shown), FLEXI-DISC™ tubular cable conveyors or PNEUMATI-CON® Pneumatic Conveying Systems.

Flexicon's Bulk-Bag-to-Rigid-Bin Weigh Batching System seals against the clean side of the bag spout, elongates the bag for total evacuation, and allows dust-free retying of partially empty bags. A low-profile de-lumping device breaks up agglomerates as a gravimetric feeder loads accurately weighed batches into rigid bins.

This Automated Weigh Batching System conveys material from Flexicon bulk bag dischargers via Flexicon flexible screw conveyors to a weigh hopper mounted on load cells at mezzanine level. Weighed batches are automatically discharged through a rotary airlock valve into a Flexicon Pneumatic Conveying System, transporting the pre-weighed batch to a blender.

Simple or Sophisticated Batch Control

Gain-in-Weight Systems



Flexicon mechanical (above) and pneumatic (below) Gain-in-Weight Batching Systems transport material from any source to a hopper, blender, or other equipment mounted on load cells.

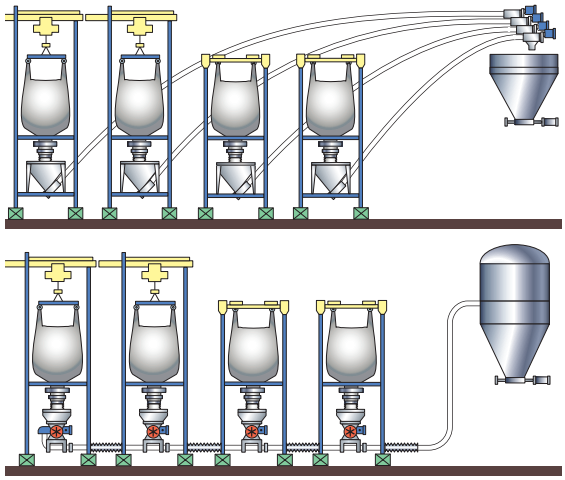
Flexicon Gain-in-Weight Batching Systems convey bulk ingredients mechanically or pneumatically from any location to a central receiving vessel mounted on load cells. The receiving vessel can be a hopper positioned above a blender, reactor, or other process equipment, or it can be the equipment itself.

When the batch sequence is initiated by a manual start button or automated signal, a programmable controller activates the first mechanical conveyor or rotary airlock valve to begin loading the first ingredient into the receiving vessel at maximum feed rate.

For greater accuracy, the controller steps-down the feed rate to trickle prior to reaching the target weight. To compensate for material-in-flight, the mechanical conveyor or rotary airlock valve is stopped immediately before the target weight is reached.

The Gain-in-Weight Batching System at left weighs a major ingredient supplied in bulk bags, and a minor ingredient dumped manually. The controller starts and stops the conveyors to weigh each material in sequence, and actuates a slide gate valve to discharge the batch. The system at right conveys material from four BULK-OUT® bulk bag dischargers to a weigh hopper which discharges into a blender. Blended batches can be discharged into shipping containers (shown) or process equipment.

Loss-of-Weight Systems



Flexicon mechanical (above) and pneumatic (below) Loss-of-Weight Batching Systems transport material from one or more bulk bags to a common hopper, blender, conveyor, shipping container, or any process vessel.

Flexicon bulk bag Loss-of-Weight Batching Systems consist of a BULK-OUT® bulk bag discharger mounted on load cells which measure weight loss of each discharger during the batching cycle and transmit the information to a system controller.

The batch sequence is initiated by a manual start button or automated signal. As the conveyor unloads material at maximum feed rate, the load cells transmit loss-of-weight information to the controller, which reduces the feed rate to trickle immediately prior to stopping the mechanical conveyor or rotary airlock valve once the target batch weight has been unloaded. System software permits mid-batch bag changes.

Multiple weigh batch dischargers can each convey a different ingredient to a central discharge point such as a hopper, blender, reactor, or other process equipment.

The Loss-of-Weight Batching System at left discharges one or more bulk bags while weighing the material and conveying the batch directly to any process vessel. Load cells transmit the amount of weight lost to a controller, which stops the conveyor once the target batch weight has been reached. The system at right conveys material from two Flexicon bulk bag dischargers into a filter receiver which discharges into a blender. The manual bag dump station allows the addition of pre-weighed minor ingredients to the batch.

Complete Controls and Automation Services

Maximise productivity of all Flexicon equipment and systems

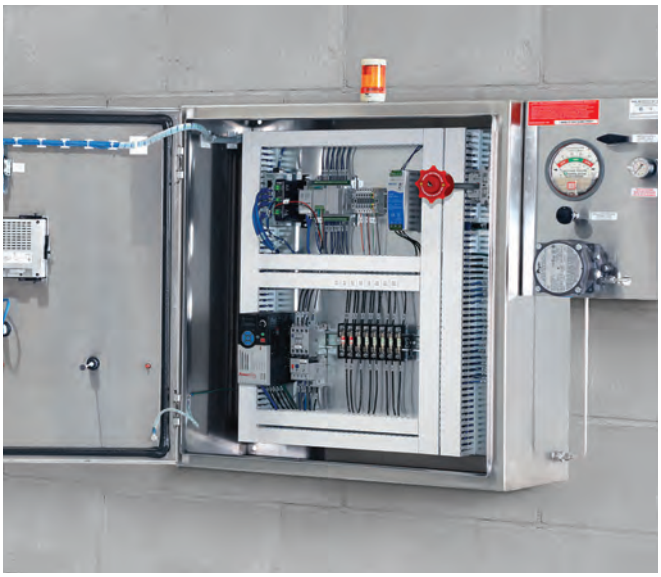
The Flexicon Controls and Automation Department matches state-of-the-art control technologies with Flexicon's full-scale fabrication capabilities.

Flexicon specifies, designs, builds, and tests control systems that ensure maximum equipment productivity, while adhering to each customer's requirements.

Performing all assembly in-house ensures tight adherence to each panel's custom specifications as detailed on mobile wireless displays throughout the shop.

All Flexicon equipment, from basic conveyors to sophisticated plant-wide process systems, are offered with programmable logic controllers (PLCs) and human-machine-interfaces (HMIs) offering the following benefits:

- Easy-to-operate interfaces, from push buttons to human-machine-interfaces (HMIs) with touch screens and graphic representations of equipment inputs and outputs, all customised by application
- 100% Bench testing to ensure proper monitoring and control functions using actual inputs/outputs such as simulated scale systems, various types of sensors and electric motors
- Support of process data exchange between equipment controls and the customer's plant-wide process control program such as reporting batch weights and other operational parameters to plant floor equipment, and uploading of weight deviations, alarm signals and any type of feedback required for plant optimisation
- Components that are logically configured and labelled for easy-to-follow troubleshooting by plant personnel
- IP65 and explosion proof control panels



Flexicon offers ATEX rated explosion-proof control panels.

Programmable logic controls incorporate data and process control systems

Flexicon's advanced control systems maximise the performance of stand-alone bulk handling equipment and engineered systems, and communicate seamlessly with your upstream and downstream processes.

As a world leader in the bulk handling industry, Flexicon maintains exclusive partnership agreements with leading original equipment manufacturers of process control hardware and software. As a result, your equipment will benefit from state-of-the-art controls that deliver unsurpassed versatility and reliability, allowing you to improve the productivity, safety and cleanliness of your processing environment.

In addition, the comprehensive range of controls offered by Flexicon ensures that your controls package is perfectly matched to your equipment or process sequence—whether you are purchasing a basic conveyor or a sophisticated plant-wide system incorporated into your new or existing process.

As your single-source provider, Flexicon offers the extensive resources and process experience required to balance developmental costs and increase design flexibility, while assuming complete system responsibility.

Plant personnel can download programs to start, stop, slow, speed-up, delay, advance or cycle equipment functions.

More than hardware and software, Flexicon provides all of the ancillary services needed to ensure the successful operation of your controls—during start-up and throughout the life of your equipment:

- Complete documentation: all program information is provided to you following installation, affording you the option of implementing changes on-site or through Flexicon
- Security: a layered system of access codes enables you to protect proprietary information, while allowing others limited access to data required to perform routine applications
- Backup: detailed or essential commands can be backed up to remote locations, improving the safety of data storage while allowing rapid reprogramming in the event of an interruption of service due to power outages, severe weather or fire
- System management: A Flexicon Programmable Logic Control System can manage the operation of numerous processing systems such as flow promotion devices, dust collectors and conveyors, regardless of the manufacturer or length of time the equipment has been in service
- Online support: Adjustments that cannot be performed by your on-site personnel can typically be handled by a Flexicon engineer online. In the event the issue cannot be resolved online, all relevant information is downloaded to your Flexicon service technician, reducing troubleshooting time
- Scalability: As your needs and/or your systems change, the Flexicon PLC can be fine-tuned or reprogrammed to meet processing line expansion, new equipment and new application requirements

Flexicon® World Wide System Engineering, Design, Manufacturing, Testing and Field Support

Flexicon is an international organisation with administrative, engineering and manufacturing capabilities on four continents, and an extensive worldwide network of applications engineers and field support technicians to serve you—a unique consolidation of bulk handling specialists with 1000+ years of combined experience.

At the local level, Flexicon personnel provide the knowledge and resources needed to satisfy the diverse requirements of individual process plants country-by-country, while providing the worldwide infrastructure, long-term vision, stability and single source capability required by multi-national organisations.

An extensive research and development programme continually sets new standards for bulk handling equipment performance with entirely new designs, product improvements and equipment that complies with certifications required by governmental and industry associations for chemical, food, dairy and pharmaceutical applications—both nationally and internationally.

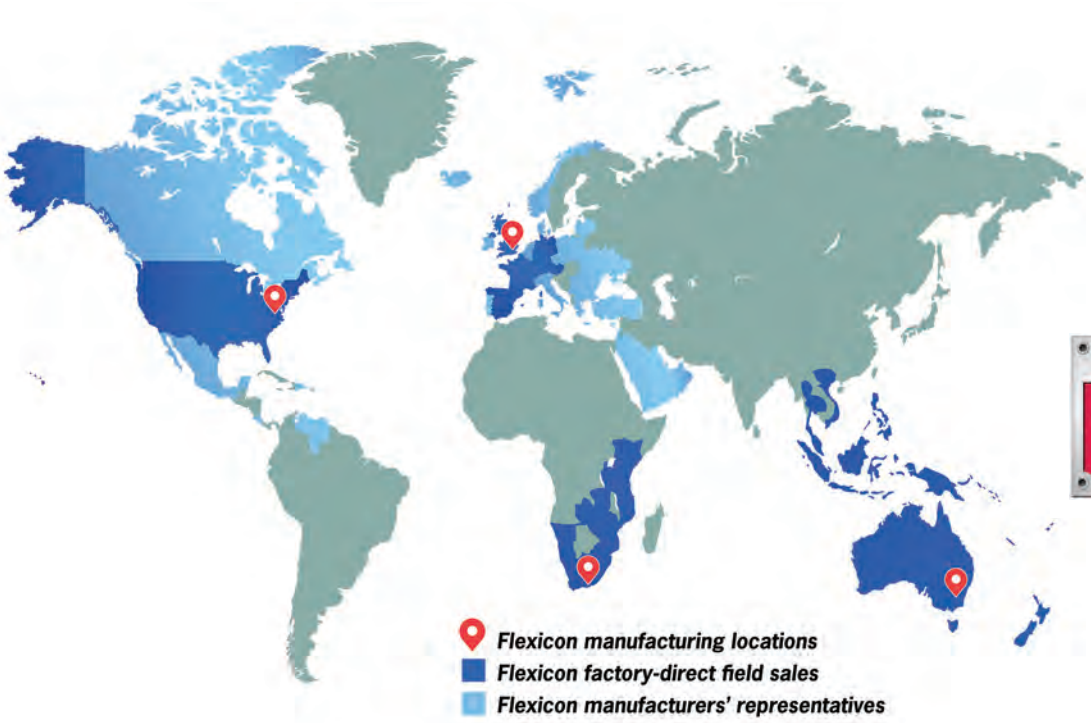
Flexicon's design engineering staff solves the most unusual problems using highly custom equipment, basing solutions on unique customer requirements, not merely on existing product line offerings. This approach provides each customer with the most efficient solution to his or her individual problem, and provides Flexicon with a depth and breadth of bulk handling experience unequalled by any other comparable manufacturer in the world.

Testing facilities

Flexicon's worldwide testing facilities simulate full-size customer equipment and systems, verify performance prior to fabrication, demonstrate newly constructed equipment for visiting customers, and study the performance of new designs.

Test lab equipment for pneumatic bulk handling systems includes a comprehensive range of blowers, vacuum pumps, filter receivers, cyclone separators, inlet/discharge adapters and valves, and conveyor lines in a wide range of diameters and lengths, as well as bulk bag dischargers, bulk bag fillers, manual dumping stations and other equipment designed to interface with pneumatic conveyors.

Mechanical bulk handling test lab equipment includes flexible screw conveyors and tubular cable conveyors in a comprehensive range of configurations, as well as bulk bag dischargers, bulk bag conditioners, bulk bag fillers, manual dumping stations and other equipment designed to interface with mechanical conveyors.



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