



GUIDE TO BULK MATERIAL HANDLING

Centro provides bulk material solutions to enhance industrial process efficiency and effectiveness. Our bulk material solutions are designed to work reliably with bulk solids and provide customers with a wide range of benefits that optimize their processes.

With Centro's bulk material solutions, industrial customers can achieve lower manufacturing costs, increased process reliability, improved product quality, enhanced process information, and improved feedback from operations.

Our bulk material solutions offer reliable materials handling capabilities for bulk solids in numerous industries, including mining, construction, food processing, and chemical production. We utilize advanced technologies to provide our customers with efficient bulk solid handling systems tailored to each customer's individual needs.





Railcar Unloading Systems

Vacuum railcar unloading systems are designed to quickly and safely transfer various types of bulk solid materials from railcars into production processes or storage facilities while maintaining the integrity of the material throughout the process. Regarding vacuum railcar unloading, our vacuum solutions provide a reliable and efficient transfer of bulk solid materials.

Our vacuum solutions offer advantages over traditional gravity unloading methods, as vacuum systems are faster and more efficient. Additionally, vacuum railcar unloading systems can minimize dust emissions while securely transferring materials with minimal material segregation or damage risk.

Vacuum railcar unloaders also offer enhanced safety benefits over alternative methods, as they reduce manual handling and do not require personnel to enter the railcar during the unloading process.



Bulk Bag Unloader

The bulk bag unloader is a component designed to move bulk materials out of super sacks quickly and efficiently. This system utilizes vibration and agitation to ensure nothing sticks in the bag, meaning less material loss. The unloading process is fast, safe, and energy-efficient.

Depending on the customer's needs, the material is transferred to the discharge point. This makes it an ideal solution for bulk material handling in industrial settings, as it significantly eliminates labor costs and improves productivity. It also reduces cleanup time and waste disposal costs, as there is no need for manual bag emptying or cleaning up of spilled materials.

Bag Break Stations

Bag break stations open and empty 25 kg. bags or large bags, such as FIBCs (Flexible Intermediate Bulk Containers), into the conveying system, ensuring the material is released quickly and efficiently. Bag break stations use mechanical forces like vibration, tumbling, or airflow to break up the bulk materials and release them evenly.





Truck Unloading System

A PD pump truck unloading system is a type of bulk material handling system that uses positive displacement pumps to quickly and effectively unload dry, free-flowing materials from trucks or other containers. This system is essential in many industries as it allows for fast and efficient pneumatic conveying of raw products into storage silos, saving time and money.



Custom Desiccant Dehumidification

Innovative Air Technologies (IAT) is one of the leading providers of dehumidified air handling solutions to the bulk solids industry. Their state-of-the-art dehumidification systems are revolutionizing how industrial materials are moved. These efficient and reliable systems are essential for safely and effectively transporting large volumes of hygroscopic material around industrial facilities. They're particularly important for operations working with materials that tend to absorb moisture from the air.

If you have a process that needs a specific humidity level, we can help reduce or increase the humidity in a room. If you want to reduce food spoilage and prevent mildew and mold, we can help. Suppose you need to convey a hygroscopic product or prevent your product in your silo from absorbing moisture from the environment. In that case, you can blanket the silo with dehumidified air.



Engineered Storage Solutions

CST Industries is a global leader in engineered storage solutions, specializing in the design, manufacture, and construction of storage tanks, silos, aluminum domes, and specialty covers for industrial, municipal, agricultural, and energy applications. Founded in 1893, the company has more than 130 years of experience and has installed hundreds of thousands of storage systems in over 125 countries worldwide.

CST serves a wide range of industries, including:

- Municipal water and wastewater treatment
- Dry bulk material handling and storage
- Agriculture and grain storage
- Food and beverage processing
- Mining and minerals
- Oil and gas
- Biomass and renewable energy
- Industrial manufacturing and processing

The company's product portfolio includes glass-fused-to-steel tanks, bolted epoxy tanks, factory-welded tanks, galvanized storage systems, aluminum geodesic domes, and flat-panel covers. CST is recognized for its engineering expertise, proprietary coating technologies, and ability to provide complete storage solutions from design through installation.

CST



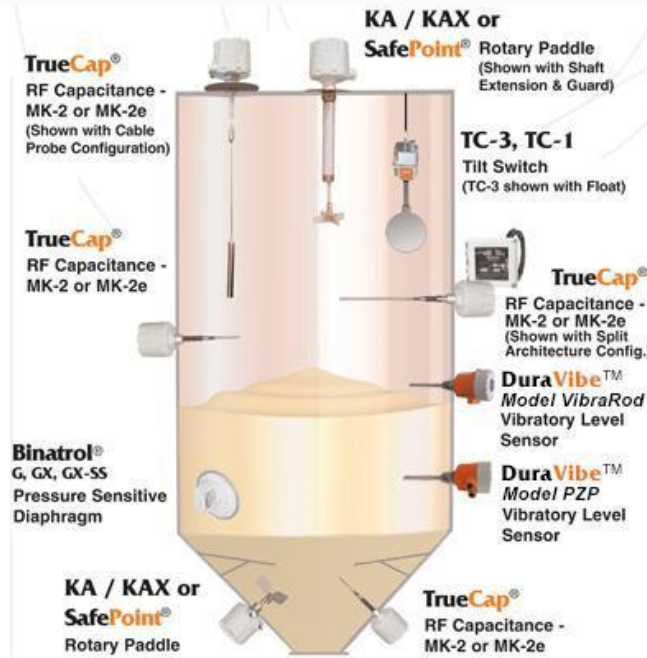
DYNAMIC AIR
Conveying Systems



Pneumatic Conveying Systems

Dynamic Air designs and manufactures custom pneumatic conveying systems and bulk solids handling equipment for powders, pellets, and granular materials. Their solutions include conveying, unloading, storage, mixing, drying, weighing, and batching systems that improve process efficiency while reducing product degradation and maintenance cost.





Sensors & Monitors

Monitor Technologies manufactures level sensors, inventory management systems, flow monitors, moisture analyzers, and dust monitoring equipment for bulk solids and industrial process applications. Their solutions help customers accurately measure, monitor, and control materials throughout storage and production operations.

Airsweep Systems

An Airsweep System is a mechanical device that promotes material flow in bulk solid materials applications. It works by creating an air current along the entire length of a hopper, bin, or silo and displacing settled material toward the discharge end. The purpose of this technology is to reduce bridging, ratholing, and stagnation of material which can lead to problems with process efficiency and production times.

A typical **Airsweep System** consists of several components, including actuators (such as pneumatic solenoids), controllers, receiver tanks, filters, drains, valves, and pressure regulators. These components are designed specifically for bulk materials such as wood chips, animal feed pellets, rice bran, TIO₂ etc., to ensure proper flow and dispersion within a confined space.

Airsweep systems are used in many industries where precise control over solid bulk material is necessary, including mining, chemical processing, food production, woodworking, and agriculture. The technology has been highly successful in these applications due to its ability to improve flow rates, reduce product waste and eliminate costly downtime. They can also enhance existing pneumatic conveying systems by providing additional airflow to ensure maximum efficiency. In addition, air sweep systems require minimal maintenance and can be easily integrated into existing process lines with minimal disruption or expense. Don't forget to ask about AirSweep's money-back guarantee.





Industrial Vibrators

An industrial vibrator is a mechanical device used to induce motion or cause a vibration of materials stored in bins, hoppers, and other bulk material handling equipment. It helps keep stored materials from packing down and blocking chutes and outlets by shaking the sides of the bin walls or agitating the material.

NAVCO is one of the most important companies for industries that require bulk material handling solutions. The company provides state-of-the-art vibratory technology, allowing customers to choose among various electric, pneumatic, and hydraulic vibrators designed for specific applications. This wide range of customizable options meets industry needs for efficient product flow – helping to prevent backup, blockages, and dusting issues that can lead to costly downtime.



Bin Activators

Bin Activators are units that help regulate the flow of bulk material industries. They work by vibrating and agitating the material, which ensures a constant and consistent feed rate.

Vibrations produced by Conveyance Solutions by **Carman** help prevent dry material from sticking to walls or getting stuck in corners, bridging, or ratholing, leading to more efficient operations for bulk material handling.

Bin Activators can be used with other equipment, such as belt conveyors or pneumatic systems, allowing for a more complete and efficient overall system.

With their ability to provide reliable performance at a low cost, Bin Activators are an essential part of many industrial processes.



Screw Feeders

A screw feeder is a specialized form of the widely used screw conveyor that regulates the volume and rate of material delivery from a bin or hopper. It is often employed in agriculture, chemicals, construction, and food processing.

The key benefit of using a screw feeder to move bulk material is its ability to accurately regulate the quantity of delivered material. A variable pitch drive shaft allows for precise control over rotation speed and volume output, which makes it highly effective in controlling flow rates and working within tight operational parameters.

In addition to regulating the quantity, another benefit of screw feeders is their ability to feed into a specific area. With the right design, it's possible to ensure that material is delivered directly where needed; this can reduce labor costs.



Conveyors

Conveyors are essential for the bulk material handling industry, as they provide a cost-effective and efficient way to transport large amounts of materials. Conveyors come in various forms, such as drag conveyors, screw conveyors, vibratory conveyors, bucket elevators, and many more.

Drag conveyors utilize a chain or belt system to drag material along the surface of the housing tube. This conveyor type is ideal for applications requiring gentle handling since it doesn't agitate or mix the material in transit.

Screw conveyors use a rotating helical shaft to move materials through an enclosed tube or trough; these are great for moving powdery substances such as cement and grain.

Vibratory conveyors rely on vibration to move materials forward along a trough or tube; these are great for conveying fragile materials.

Tube conveyors are bulk material handling equipment specifically designed to move bulk materials, such as coal and wood chips, through enclosed tube systems.

Flexible Connectors

Siftex reigns supreme in the world of industrial supplies, providing a wide range of products like flexible connectors that can be tailored to different applications.

With a focus on durability and flexibility, these innovative connectors can withstand the most demanding conditions, including temperature fluctuations, massive vibrations, and heavy pressures.

Siftex products are designed to be versatile and easy to install or replace when needed. This makes them ideal for short-term projects and long-term installations that require frequent maintenance and repair.



Centro can provide quick-connect couplings, fittings, sight glasses, adapters, and custom connection components for pneumatic conveying, dust collection, and bulk material handling systems. Our products provide reliable, leak-resistant connections that improve system performance and simplify maintenance.

Industrial Fans & Blowers

AirPro Fans Industrial Fans and Blowers are designed to meet the needs of industrial bulk solid material operations. They are engineered to be highly efficient, providing high-pressure and ample airflow from a single unit. The designs also offer flexible mounting positions, allowing for quick and easy installation.

AirPro Fans and Blowers boast sturdy construction that can handle high temperatures, harsh working conditions, dust particles, and other contaminants. This makes them well-suited for various applications ranging from ventilation systems in industrial spaces to cooling process equipment in factories.

AirPro Fans come with the best warranty in the industry to ensure long-term performance and satisfaction. AirPro Fans offer customization options for fans and blowers according to customer-specific needs. This makes it possible to tailor the product's features, such as size, airflow performance, noise levels, power consumption, and efficiency ratings, to create an optimal solution for specific applications. The modular design also allows for easy maintenance that can extend the fan's life.

With customizability and reliable performance, **AirPro Fans and Blowers** are well-suited for various industrial bulk solid materials operations.



Dust-Free Loading

DCL is an industry leader in dust-free loading and bulk material handling solutions. Their innovative loading spouts, dust collection systems, aeration equipment, and integrated loadout systems help customers increase throughput, improve workplace safety, minimize dust emissions, and meet environmental regulations. With over four decades of experience, DCL delivers customized solutions for virtually any dry bulk material and loading application.



Filtration & Separation

Solberg Manufacturing designs and manufactures industrial filtration, separation, and silencing products including inlet filters, filter silencers, vacuum filters, moisture separators, and oil mist eliminators for blower, compressor, vacuum, and process applications.



Dust Collection

Dust collection systems are essential for bulk solid material industries as they minimize the number of airborne dust particles in the work environment.

Cartridge Filters and **Bag Filters** are two types of dust collection systems. Cartridge filters remove airborne particles from the airstream, while bin vent filters prevent contaminated air from escaping from the loading hopper. Both are essential for effective dust collection and help ensure a safe work environment.

SmogHogs feature high-efficiency fume and mist removal using either ESP or PEACH Filtration Technology. Reduce personnel inhalation of contaminants and oil buildup contributing to slip and fall incidents.

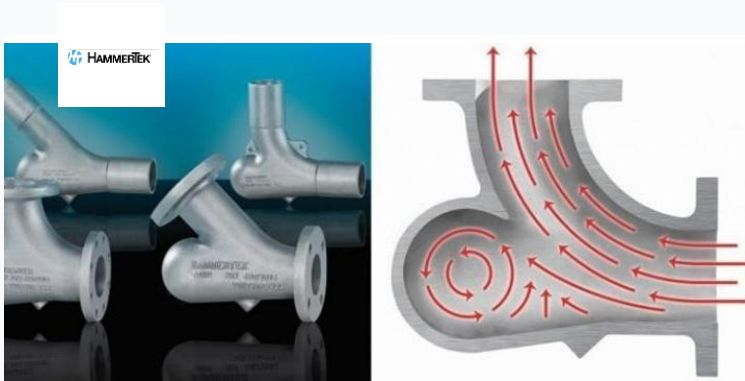
DustHogs are designed for industrial applications with harmful dust concentrations. They feature a cartridge filter system that can trap even the most stubborn cloud of dust particles.

Nord Fab's ductwork systems are designed to take air from one point and move it to another. This makes them ideal for quickly removing dust and other particles from the work environment. At the same time, their modular design allows for easy maintenance and replacement of sections that become worn or damaged over time.

MasterDuct is an innovative product that provides flexible ductwork solutions. It's made of lightweight yet durable material that can be easily reconfigured or expanded as needed, making it an excellent choice for large-scale operations.

Air Control Systems is renowned for its air knife systems that use low air pressure to precisely remove debris, dust, and other unwanted particles from various industrial products.





Pneumatic Conveying Components

HammerTek's SMART ELBOW® products are engineered pneumatic conveying elbows that utilize patented vortex-flow technology to create a self-renewing cushion of material that protects the elbow from abrasion and impact. This innovative design significantly reduces wear, minimizes product degradation, lowers maintenance costs, and extends system life in demanding bulk solids handling applications. HammerTek solutions are trusted across a wide range of industries where reliable, efficient pneumatic conveying is critical.

JL Components designs and manufactures pneumatic conveying and bulk material handling equipment, including blower packages, sound enclosures, silencers, and custom-fabricated process equipment for industrial applications.



Lorenz Conveying Products manufactures pneumatic conveying components, diverter valves, slide gates, gravity flow equipment, and custom-engineered solutions for bulk solids handling and material conveying applications.



Volumetric/ Gravimetric Feeders



Kubota Brabender Technologie is a global manufacturer specializing in high-precision feeding, weighing, and bulk solids handling systems for industrial processing applications. The company designs and manufactures gravimetric and volumetric feeders, discharge systems, flow measurement equipment, and process solutions used to accurately meter powders, granules, liquids, and fibers in continuous and batch manufacturing operations.

Vacuum Pumps & Systems

American Vacuum Company is a manufacturer of industrial vacuum pumps, vacuum systems, and custom-engineered vacuum solutions designed for a wide range of industrial and process applications. The company specializes in liquid ring vacuum pumps, rotary vane pumps, vacuum boosters, centralized vacuum systems, and complete turnkey vacuum packages used in manufacturing, chemical processing, plastics, food processing, environmental, and material handling industries.

American Vacuum Company provides both standard and custom vacuum equipment engineered to improve process efficiency, material conveyance, product recovery, drying, filtration, degassing, and plant utility operations. Their systems are designed for durability, energy efficiency, and reliable performance in demanding industrial environments.



OSHA-Compliant Personnel De- Dusting Equipment



JetBlack Safety is a global leader in personnel de-dusting and workplace dust control solutions. Their innovative cleaning booths and cleaning stations provide a safe, OSHA-compliant alternative to compressed air for removing dust, fibers, and debris from personnel and PPE.

By helping manufacturers reduce dust exposure, prevent cross-contamination, and improve workplace safety, JetBlack Safety delivers cleaner, safer, and more efficient industrial operations across a wide range of industries.



Ergonomic Lifting

Southworth provides ergonomic material handling equipment including lift tables, pallet positioners, container tilters, dock lifts, and work positioning systems that improve workplace safety, reduce operator strain, and increase productivity.

Baghouse Replacement Filters and Parts

We know it is imperative to provide inventory on Baghouse Replacement Filters and Parts that will allow us to meet our customers' urgent needs. We are also aligned with the best manufacturers of replacement parts that stock hundreds of cartridge filters, bag filters, cages, valve kits, gauges and all other necessary components that are required in the event of an upset condition. Getting the right parts for your equipment as quickly as possible means less costly downtime.

- Goyen, Asco, Turbo purge valves & kits
- Door Seals
- Magnehelic or Photohelic d/p gauges
- Bags & Cages
- Cartridge Filters
- Timer Boards





Bag Slitter Machine



V-Blender



Industrial Mixing & Processing

PerMix is a global supplier of industrial mixing and processing equipment, offering innovative solutions for blending, mixing, drying, coating, and size reduction applications. Their extensive product line includes ribbon blenders, paddle mixers, plow mixers, planetary mixers, vacuum mixers, reactors, and drying systems designed to deliver superior product consistency and process efficiency.

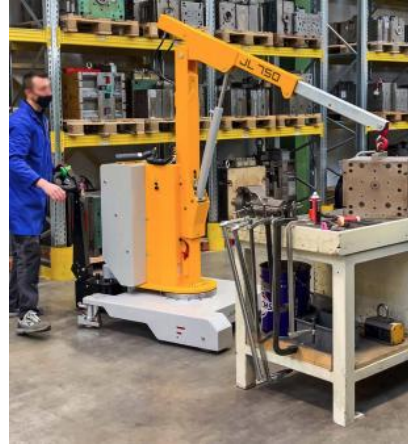
PerMix serves a diverse range of industries with reliable, cost-effective equipment and customized process solutions.



Safe Access

Lapeyre Stair helps industrial customers replace unsafe ladders and inefficient access methods with engineered stair and platform systems that improve worker safety, reduce downtime, and provide long-lasting, code-compliant access to equipment, rooftops, mezzanines, conveyors, and elevated work areas. Their ability to provide customized, prefabricated solutions makes them an excellent choice for both new construction and retrofit projects. Lapeyre Stair's products are engineered to meet **OSHA and International Building Code (IBC)** requirements and are custom-designed for industrial application.





Compact Mini Cranes

Just Lift manufactures innovative **Made-in-Italy** electric and hydraulic mini cranes that make lifting, transporting, and positioning heavy loads safer, faster, and more ergonomic. With lifting capacities from **150 kg to 800 kg**, their compact, self propelled cranes provide a flexible alternative to forklifts and overhead cranes for manufacturing, maintenance, assembly, and material handling applications. Just Lift solutions improve productivity, reduce manual lifting injuries, and deliver precise load positioning in confined workspaces, helping manufacturers create safer and more efficient operations.



Electric Material Handling

Zallys manufactures premium **Made-in-Italy** electric material handling equipment designed to safely and efficiently move heavy wheeled loads while eliminating manual pushing and pulling. Their product line includes electric tuggers, tow tractors, personnel carriers, and load transporters with capacities up to **30,000 kg (66,000 lbs.)**. Serving industries such as manufacturing, food processing, pharmaceuticals, airports, healthcare, logistics, and warehousing, Zallys solutions improve worker safety, increase productivity, and provide flexible, zero-emission alternatives to forklifts and fixed conveying systems. With innovative engineering, customizable configurations, and worldwide support, Zallys delivers ergonomic material handling solutions that help companies reduce labor strain while improving operational efficiency.



Fire and Explosion Mitigation

Boss Products fire and explosion mitigation equipment is integral to bulk solid materials handling facility, providing workers safety and environmental protection. The mitigation equipment utilizes flame sensors, chemical suppression systems, and other fire suppression tools to detect and counteract potential fire or explosive incidents before they become unmanageable. Let Centro's experts help with your NFPA Compliance.



Airlocks (Double Dump Valves)

Airlocks, or double dump valves, regulate material flow into and out of equipment. They provide a barrier between process stages containing different pressures or temperatures and can prevent air from entering the system when introducing new material. Airlocks ensure production lines remain optimal with minimal disruption by preventing contamination from outside elements and hazardous conditions from within.

The Top Manufacturers and the Best Solutions from Experts who know Bulk Solid Materials





Are you struggling with dusting issues in your dust collectors?

We were, too, until we brought in the product experts Cindy Lewis and Lee Free from Centro.

Their recommendations for highly effective filters and longer-lasting replacements have exceeded our expectations. No more frequent filter changes – just a once-a-year replacement. Say goodbye to dusting problems and hello to cleaner air.



Themeka Jones

Production Engineer



Centro Bulk Solids Handling Division can help provide:

Recommendations for Process Improvements, Dust Collection System Surveys, Dust Ducting Sizing and Layout, Dust Hood Design, Pneumatic Conveying Sizing and Design, Fan sizing, Preventative Maintenance Program Assistance, NFPA Compliance Assistance, OSHA & MSHA Compliance Assistance



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