



**BULK
FLOW**



POLIMAK®

CONTAINERIZED TRANSPORTATION

OPTIMIZING BULK
SOLIDS LOGISTICS
OPERATIONS

www.bulkflow.net

www.polimak.com

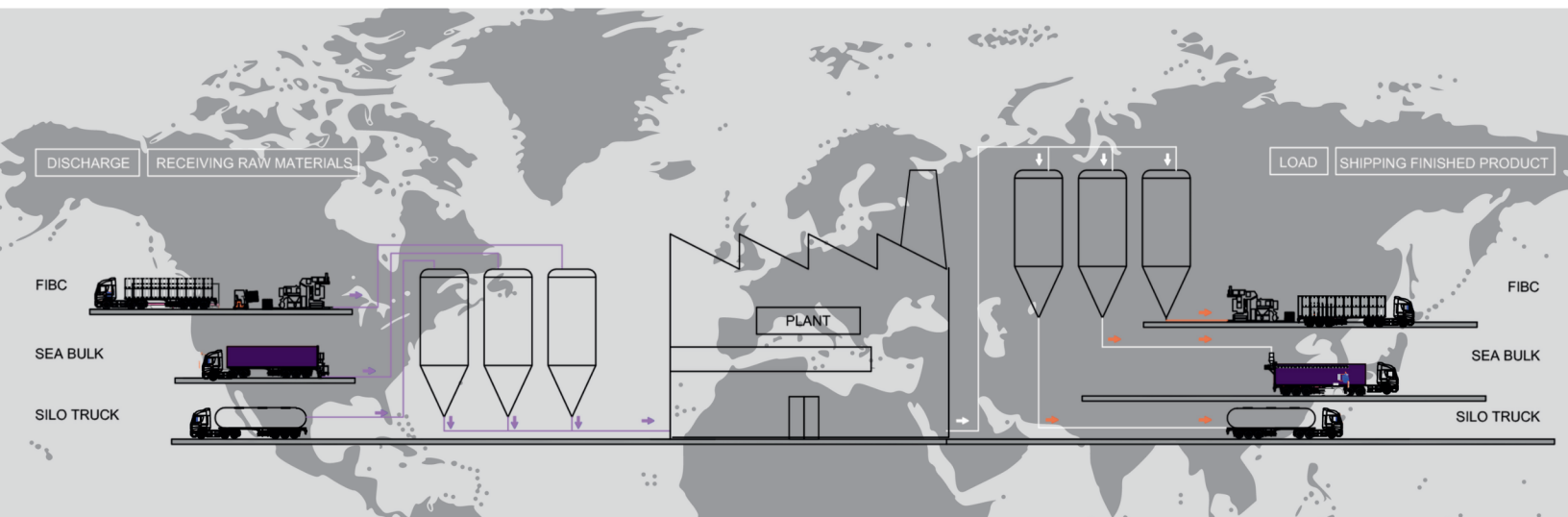


CONTAINERIZED TRANSPORT OF BULK SOLIDS

Transporting bulk solids using containers offers significant advantages in modern logistics.

- Containers provide a **standardized and versatile solution**, allowing easy intermodal transfer between different modes of transportation such as ships, trains, and trucks. This ensures seamless and efficient movement throughout the supply chain.
- Containers also enhance **product protection, reducing the risk of contamination and material loss**. Moreover, containerized transport minimizes handling, speeding up loading and unloading processes, resulting in **reduced costs and improved productivity**.

As a result, containers prove to be a smart choice for industries seeking cost-effective, safe, and well-organized bulk solids transportation.



IDEAL BULK SOLIDS FOR CONTAINER TRANSPORTATION



White cement



Calcium carbonate (CaCO_3)



Flour



Starch



Zeolite



Aluminum oxide (Al_2O_3)



Maximum payload in each shipment

Best way to optimize payload by maximizing cargo space utilization.



Dust-free loading

Minimize air-to-particle ratio.



Minimize particle degradation

Get complete control and maximize protection over the merchandise in our container liners without transfer from different modes of transportation.



Maximum output rates

Using ISO containers as a cost-efficient transport and storage option for the bulk commodity industry with the lowest energy loading systems.

CONTAINERIZED TRANSPORT OF BULK SOLIDS

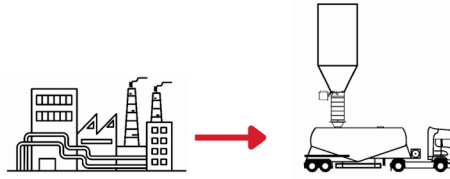
THE PERFECT BULK TRANSPORT PROCESS

Polimak has the product and all-around solutions to help hard-to-flow bulk producers in logistics and warehouse management.

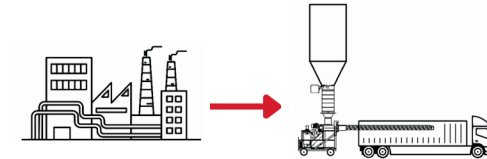
LOADING

Create your loading method for the hard-to-flow bulk solids using various options of loading. Our innovative solutions offer a range of loading alternatives tailored to handle even the most challenging bulk materials.

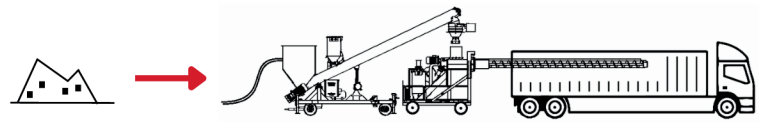
Whether it's through vacuum technology, conveyors, or specialized equipment, Polimak provides versatile solutions that ensure efficient and reliable bulk solid transfer.



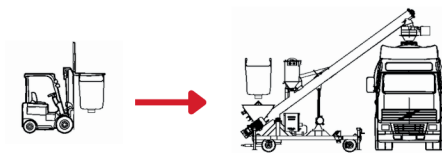
Loading from the supplier's plant



Direct loading from a silo to container



Loading from stockpile to container



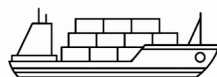
Loading from bulk bags to bulk truck

MAIN-CARRIAGE

Use deep sea container shipping, short-sea shipping and intermodal transport as the most cost-efficient modes of transport container.

- Transport your cohesive bulk solids in standard ISO containers.

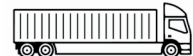
COMBINED TRANSPORT



Container ship



Train

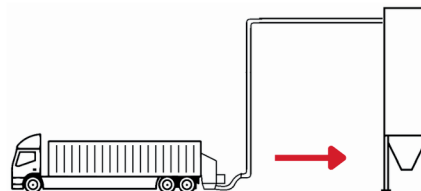


Standard container chassis

UNLOADING

Safe, horizontal, mechanical, unloading processes to various destinations.

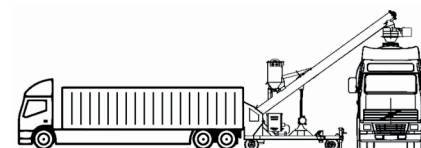
- The standard container can be used as a bulk solid silo and transfer the product directly out of it to process.
- It's not required to tilt the chassis at all times.



Discharge container to silo



Discharge container to production process

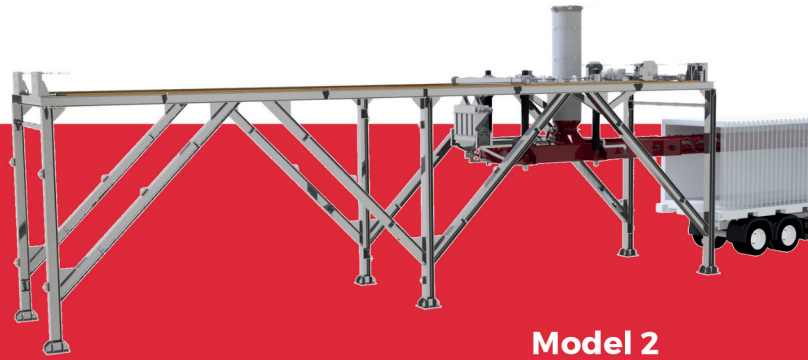
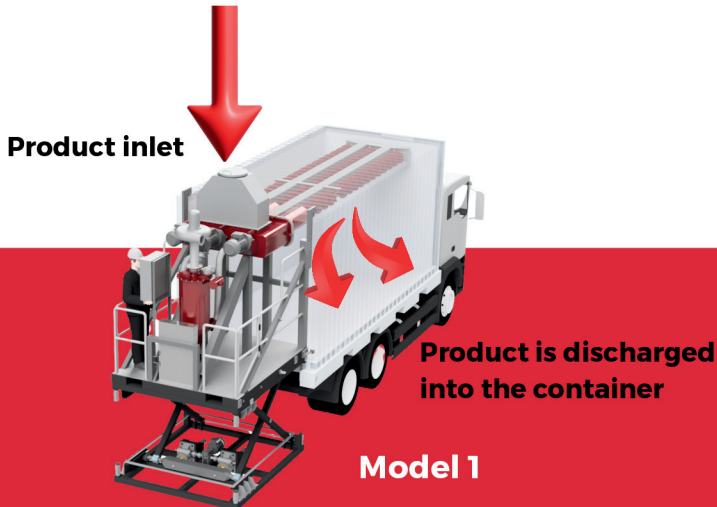


Discharge container to bulk truck

CONTAINER FILLING SYSTEM

The Triple Screw Conveyor Container Filling System is a cutting-edge advancement in the realm of bulk solids handling. Distinguished by its ingenious design incorporating three screws, this system guarantees a uniform distribution of materials across the container's area.

Through its precision engineering, it redefines container loading with heightened efficiency, uncompromising safety, and impeccable dust control, making it an essential asset for optimizing bulk solids logistics operations.



MAIN ADVANTAGES & FEATURES

- ✓ **Maximize Payload:** The screw conveyors push the bulk solid throughout the container with a three-open screw system forward, right, and left. The loading of the bulk solid continues until it meets the back wall of the container, **optimizing the area** inside the container.
- ✓ **Fast & Dust-Free:** The three screws offer a capacity of 120 tons per hour. The equipment is designed with a **pneumatic seal** that allows for a dust-free loading operation. Hence, the air is not added to transferred bulk solids, so the dust collection need is minimized.
- ✓ **Heavy Duty & Low Maintenance:** Crafted for rigorous tasks, this system guarantees exceptional reliability, demanding minimal to negligible maintenance efforts.
- ✓ **Low Power Consumption:** The least power consumption of all loading equipment options.
- ✓ **No Particle Size Degredation:** Open screw system pushes the product forward with minimum friction to the particle.
- ✓ **Highly Moveable:** The loader is affixed by means of a forklift to the container on the truck chassis, and lined up under the silo.



WORKING PRINCIPLE OF CONTAINER FILLING SYSTEM

a. Installing the Liner Bag Designed for the Container Filling System

The most diverse commodities can be loaded and transported anywhere, protected by Polimak's multi-layered polyethylene film, which is extruded in one piece for seamless protection against humidity from marine condensation.



b. Fixing the Loading System onto the Container

1. The system is inserted in the liner bag (inside the container) and fixed onto the container's twist-locks.
2. Specially designed sleeve seals the Loading System airtight with pneumatic closure.
3. The air blower on the system is attached to the liner bag's air sleeve, keeping it inflated. Hence, the liner bag is kept fully inflated during the loading process.



c. Adjusting the Silo Unloading Spout into the Container Filling System's Hopper

d. Loading Process

1. Once the system is started to being fed with the bulk solid, the screw conveyors start to turn and material flow into the container begins.
2. The main characteristic of the Container Filling System is that the bottom part of the liner bag begins to bulge from side to side, which means the loading is evenly spread out.
3. As the product rises inside the container, it meets the screws which push the product forward, and to both sides.
4. When the product is pushed all the way to the back wall of the container, the system sends a signal to the operator to close the silo.
5. To remove the Container Filling System from the loaded container, the screws continue to turn and the forklift disengages the Screws from the container and the truck goes forward.



ADVANTAGES OF THE CONTAINER FILLING SYSTEM WITH DIFFERENT TYPES OF BULK SOLIDS

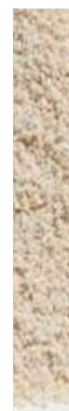
1. Medium density polymers

- Need to be loaded in 20 foot containers to be competitive.
- Optimizing 20 foot containers' interior space (33 cubic meters) when loading, is of prime importance.
- Factories that produce polymers need fast loading bulk protocols.



2. Medium density powder products

- To be competitive medium density powder products must be loaded in 20ft containers.
- Loading medium density powder products pose challenges due to aerification, which decreases the relative density of powder products.
- Dust is a huge challenge in industrial and logistic facilities and dedusting machinery is very expensive.
- Powder products are usually high volume bulk solids that must be loaded quickly, efficiently and without producing dust.



3. High density powder products

- High volume commodities which need to be loaded efficiently and quickly.
- The loading process must not produce dust in any way.
- Reliable loading machines that work round the clock with minimum maintenance are necessary.



CONTAINER DISCHARGE SYSTEM

Polimak Container Discharge System is a revolutionary containerized bulk handling system that takes on the key issues in hard-to-flow and extremely light products so they may be easily transported in 20', 30', 40', 45' or 53' containers.

The system does not rely on gravity for the commodity to flow out of the container, instead, it uses a patented floating floor system that, in conjunction with a proprietary discharge frame, drags the product out of the container progressively, regardless of its degree of cohesiveness (compaction, tunnelling, arching, bridging, etc.).



Container Discharge Systems

Product is discharged with pneumatic conveying pipeline into the process line

MAIN ADVANTAGES & FEATURES

- ✓ ISO containers can be used to transport any bulk-solid and, therefore, any final destination can be reached at a competitive rate without trans-loading charges.
- ✓ No container tilting equipment-unloading system is required.
- ✓ The mechanically, horizontal, bulk unloading system permits standard unloading of any 20', 30', 40', 45' or 53' containers in a professional and safe manner.
- ✓ The process is mechanical; therefore, output based on time and/or quantity can be measured and controlled to match destination requirements.
- ✓ The system offers dramatic savings in packaging, handling and manpower costs compared to using super-sacks, 25-kilogram bags, octabins, or pallets. Equally important, the system assures that you maximize the container cargo space and thus minimize the cost per kilograms transported.



CONTAINER DISCHARGE SYSTEM

TYPES OF BULK SOLIDS: CHALLENGES & SOLUTIONS

LOW-DENSITY PRODUCTS THAT MUST BE LOADED IN 40' CONTAINERS TO OPTIMIZE PAYLOADS:

diatomaceous earth, fly ash, silica, wheat flour, cereal, perlite and many others.

- 20', 30', 40', 45', and 53' are necessary to optimize payloads.
- Tilting systems for 40' containers are scarce.
- Container discharge system: mechanical, horizontal, bulk unloading system.
 - Safe unloading protocols for bulk solids.
 - Electronically controlled unloading protocol.

HARD-TO-FLOW HIGH-DENSITY PRODUCTS:

cement, calcium carbonate, aluminum oxide, titanium dioxide, and zeolite, milk powder, and many more.

- Avoid difficult and dangerous gravity-tilting unloading protocols.
- High-volume transport products (i.e.: cement).
- Safe, horizontal, mechanical unloading processes.
- Dosifying bulk unloading at the press of a button.
- No need for expensive facilities.
- Easy handling protocol for very cohesive bulk solids.

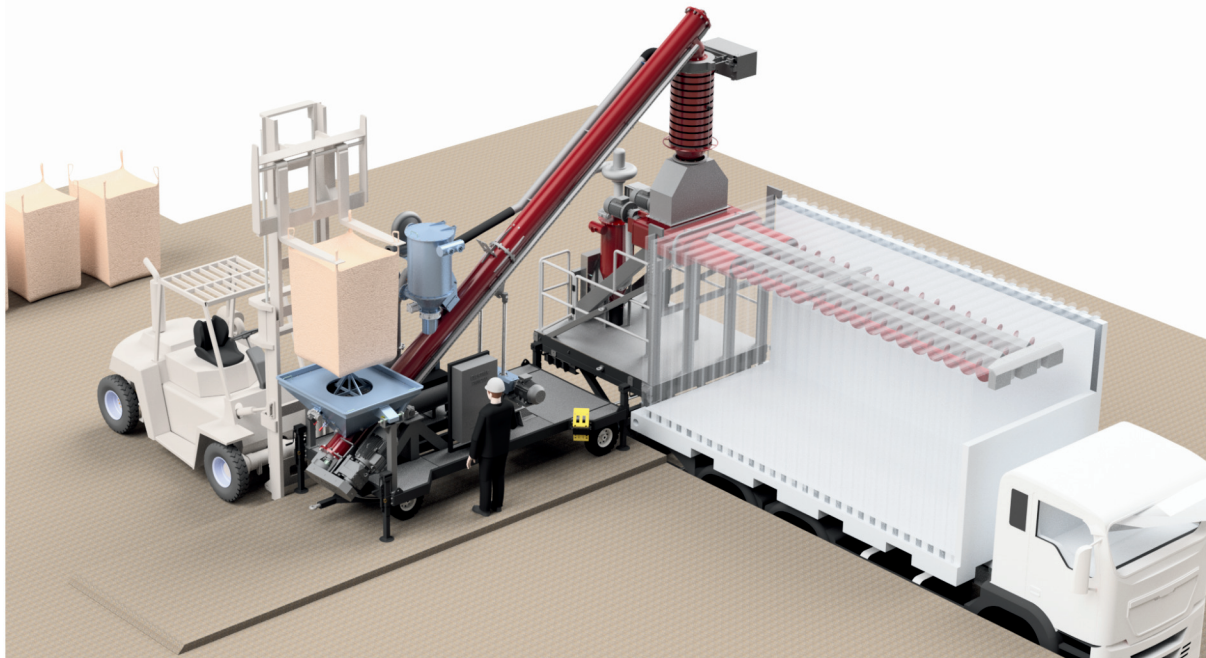
EXPORTING TO COUNTRIES WITH SCARCE CONTAINER TILTING EQUIPMENT EVEN FOR 20' DV

- Transport bulk solids with ISO containers.
- Unload bulk without gravity-tilting systems.
- Expensive tilting systems are scarce.
- The ISO container can be used as a bulk solid silo.
- Export to any market in the world easily.

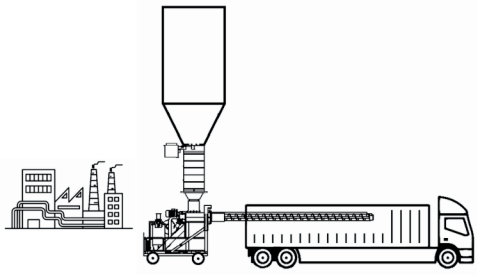


COMBINED TRANSLOADING SYSTEMS

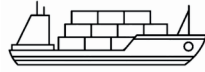
Polimak offers a comprehensive range of products and advanced solutions designed to provide optimal support to our clients. Our versatile systems can be seamlessly integrated in various configurations to guarantee the utmost efficiency in bulk material handling processes.



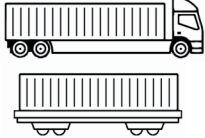
BULK SOLIDS LOGISTICS SOLUTIONS FROM START TO END



Container Filling at Supplier



Sea Freight Delivery in Containers



Local Transport in Containers

Silo Filling Mode



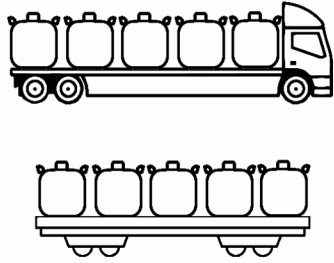
Container Discharge
& Silo Filling

Silo Discharge
& Bulk Truck Loading

Bulk Truck Loading Mode



Container Discharge & Bulk Truck Loading



Local Transport in Bulk Bags



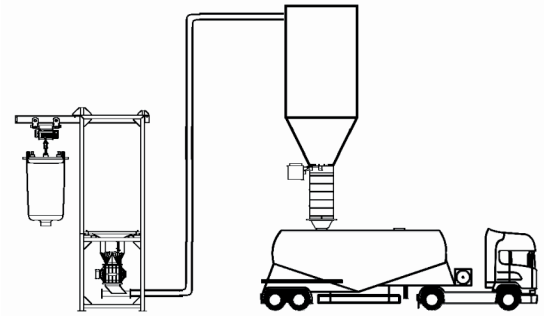
Truck Unloading
and Handling



Temporary Storage

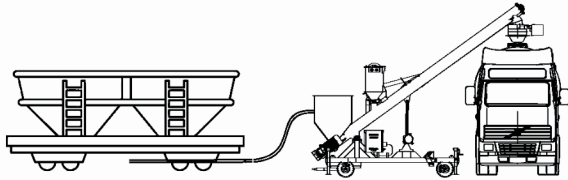


Internal Transfer
from Warehouse

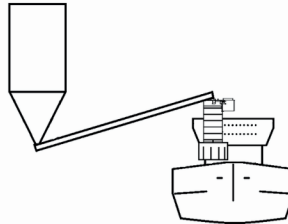


Bulk Bag Discharge
& Silo Filling

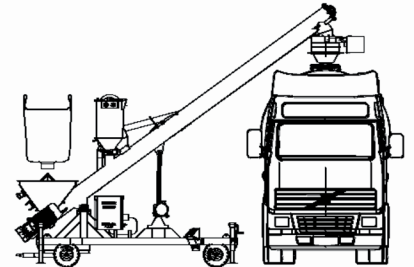
Silo Discharge
& Bulk Truck Loading



From Wagon to Bulk Truck Loading



From Silo to Ship Loading



From Bulk Bag to Bulk Truck Loading

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