BEUMER
technology in motion

CONVEYING TECHNOLOGY
LOADING TECHNOLOGY
PALLETIZING TECHNOLOGY
PACKAGING TECHNOLOGY
SORTATION AND
DISTRIBUTION SYSTEMS

Loading equipment for bulk material

BEUMER LOADING TECHNOLOGY

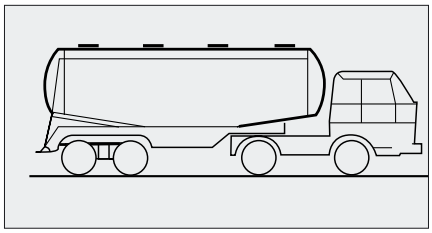
Large quantities of bulk materials must be transported by road and by rail.

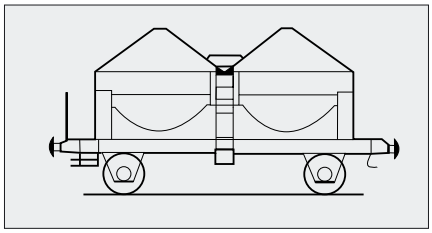
These bulk materials, whether building materials, coal, grain, animal feed, mineral aggregate or products from the chemical industry, are frequently loaded at the production site and transported as mass bulk material to their sites of use by means of appropriate vehicles.

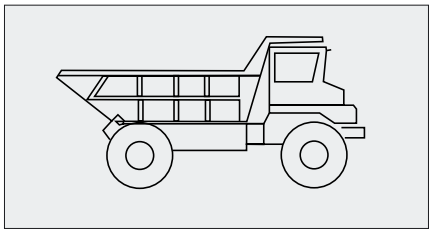
It is essential to provide technical loading and unloading equipment designed for the handling of specific products and exactly adjusted to the assembly conditions.

During the design phase the characteristics of each type of material to be loaded need to be considered, in particular with regard to the bulk density, product temperature and flow behavior.

Other important criteria include the loading capacity, weight and volume control as well as dustfree, environmentally safe operation.







Bulk loading terminal with 4 loading lanes

BEUMER is one of the leading manufacturers of loading equipment for bulk material. Decades of experience, unsurpassed quality, comprehensive know-how and continuous innovative development of this product line ensure a high degree of availability and economical operation for the customer.

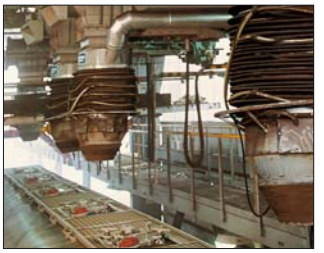
BEUMER
technology in motion

Loading head for tanker vehicles

Loading head with integrated filter

Filling level monitor / Optional equipment

Mobile loading head for tanker vehicles



Loading head for open vehicles

Material feed and metering

Automatic dispatch control system

Loading head for tanker vehicles

Tanker vehicles can be loaded quickly and free of dust by means of the BEUMER bulk loading head. It is designed according to the double-wall system i.e. material flow and dust extraction are separate from one another. The loading head must be connected to a dust-collecting air system. The lifting device is a motorized or manual cable winch. The material feed must be dosed. The device is operated by means of a suspended push-button switch.

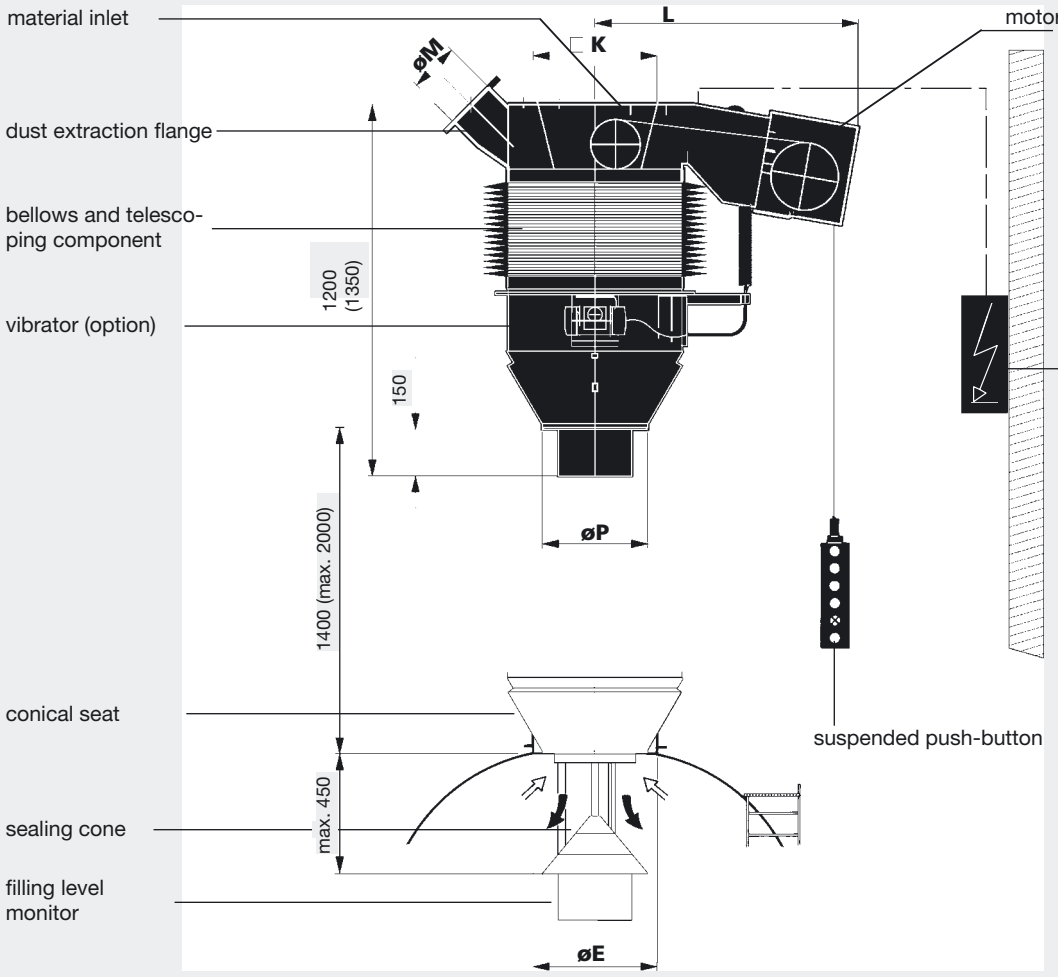
When setting down on a filling spout, the sealing cone of the loading head lowers further and simultaneously opens the material outlet spout. The variable lowering level of the sealing cone with filling level indicator makes it possible to adjust the material level in the vehicle.

For setting down, the loading head can be moved to the side to conform precisely to the position of the vehicle. At the end of the loading process the vibrator starts to loosen any material left in the head to prevent dust accumulation on the vehicles.

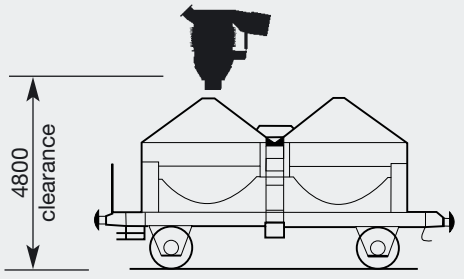
Cement loading terminal

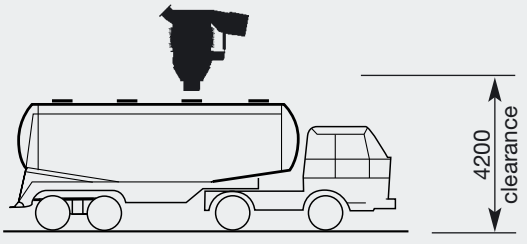
Loading unrefined sugar

Technical data



Type	Loading capacity	Dust extraction air	K	E	M	P	L
B 401	max. 300 m³/h	900 m³/h	400	400-500	159	340	850
B 501	max. 600 m³/h	1.500 m³/h	500	500-600	194	455	1200





Loading head for tanker vehicles with integrated filter

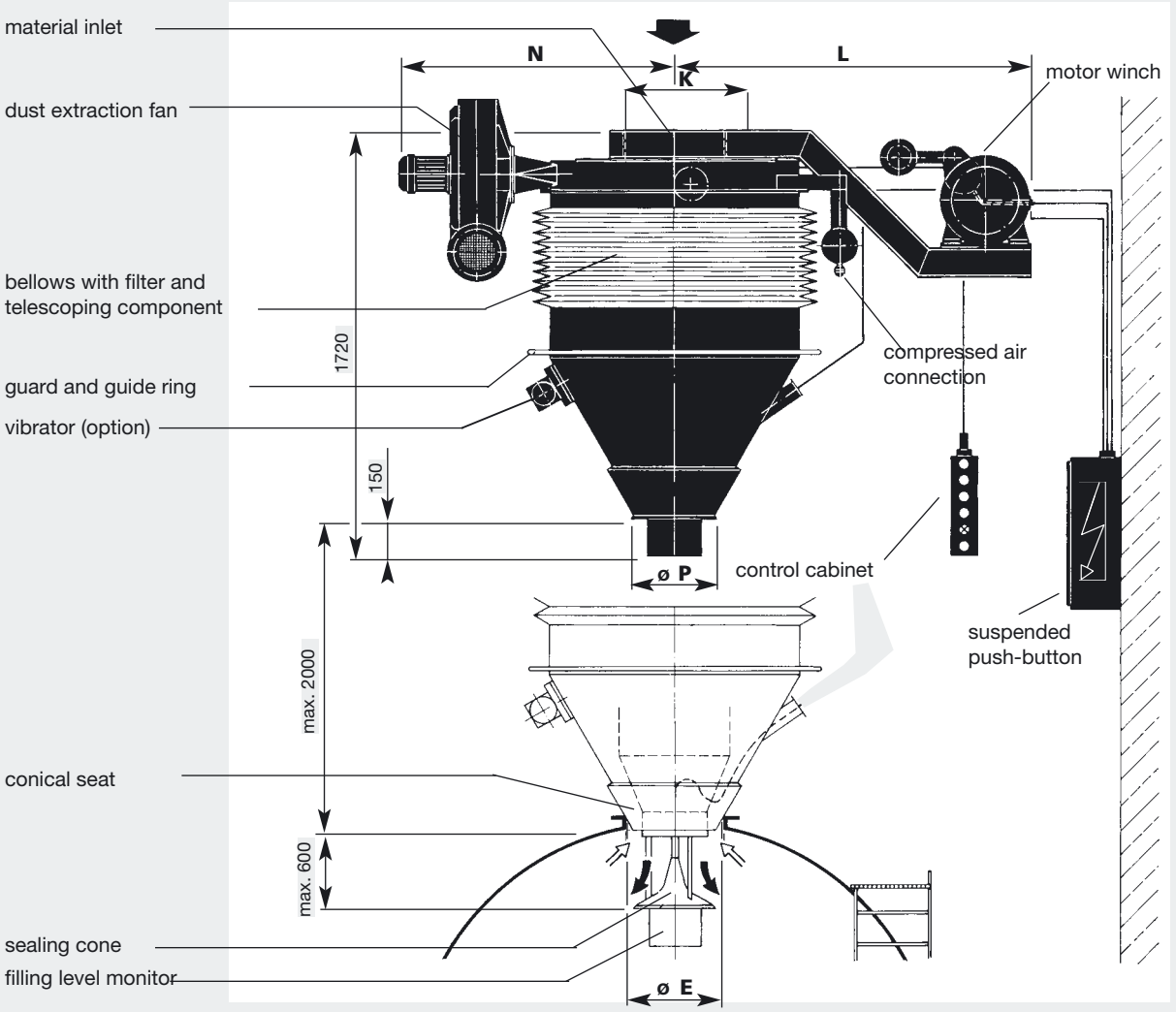
The advantage of the BEUMER bulk loading head with integrated compressed air filter is its independence from a central dust extraction and transport system, which is too costly to install just for connection to a bulk loading unit. The dust removed from the vehicle is fed back to the material infeed during the loading process. The compressed air filter consists of filter bags located between the interior telescopic material feed tube and the outer bellows. A fan on the exterior extracts the dust. The unit is cleaned by jets of compressed air controlled by a timing relay. The customer must supply the required compressed air with 4 - 6 bar. Otherwise, the loading operation is the same as for the standard loading head.

Inner filter part for the loading head

Loading system in a lime factory

Loading head with integrated filter

Technical data



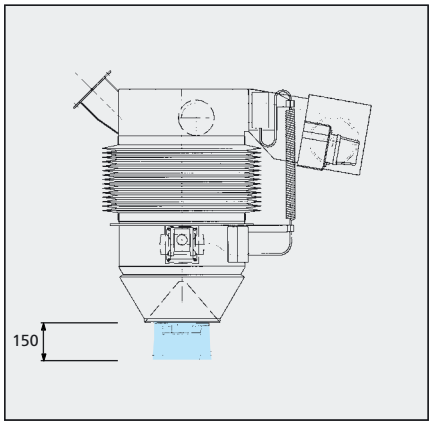
Type	Loading capacity	Dust extraction air	K	E	N	P	L	Compressed air connection	
BF 401	max. 300 m³/h	900 m³/h	400	400-500	1200	340	1450	pressure	4 – 6 bar
BF 501	max. 600 m³/h	1.500 m³/h	500	500-600	1300	455	1650	consumption	10 m³/h

Filling level monitors for loading heads

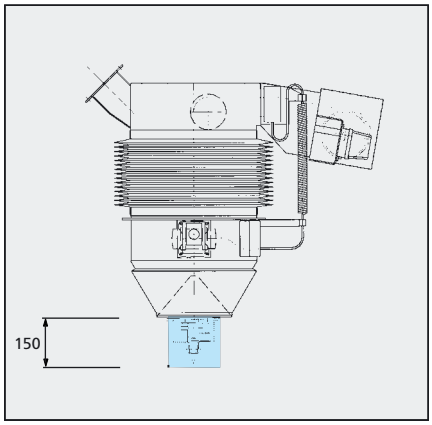
The filling level monitor serves to accurately shut off the material feed to the loading head when the vehicle is full. Different types of filling level monitors are required depending on the properties of the material being loaded.

The primary criteria used to select the correct switch are the bulk density, flow behavior as well as the product temperature. All systems are interchangeable. This ensures quick and trouble-free conversion if required.

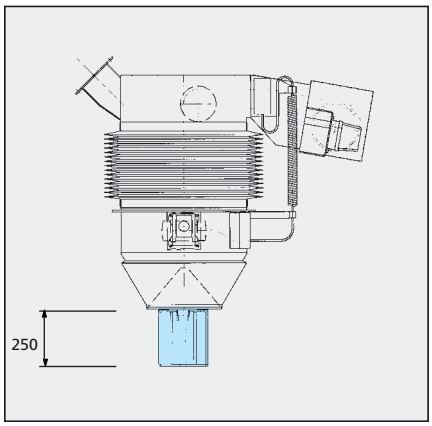
Capacitive switch



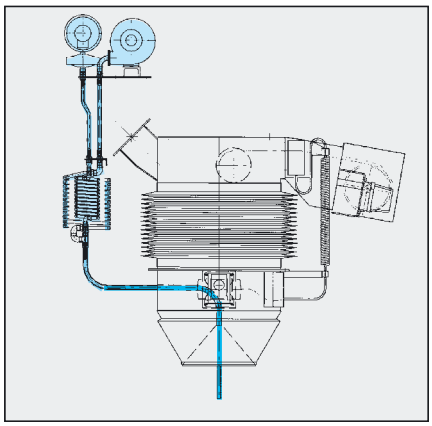
Paddle wheel switch



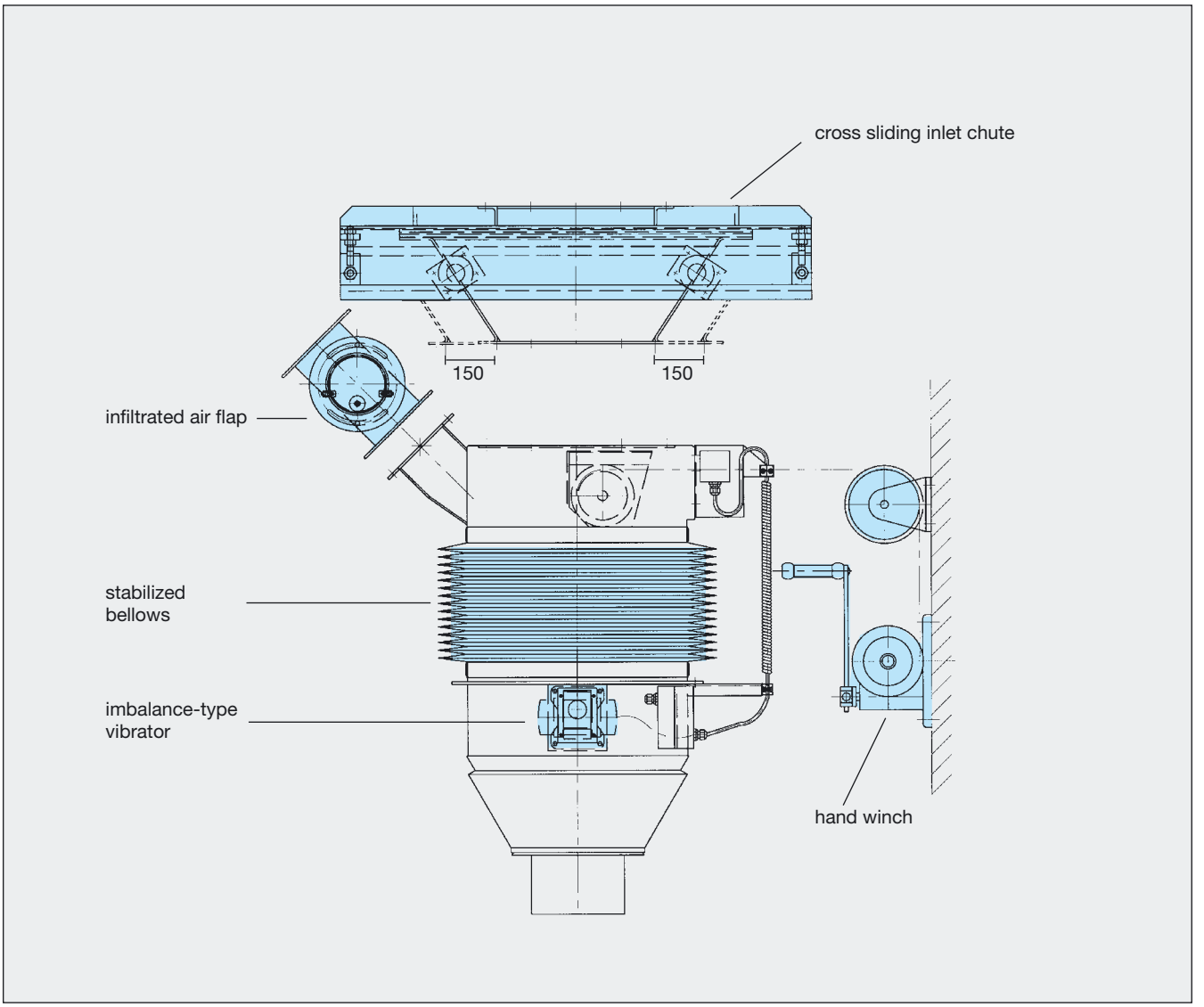
Vibration probe



Air-contact switch



Optional equipment



For all BEUMER bulk loading heads various additional modules and special models are available.

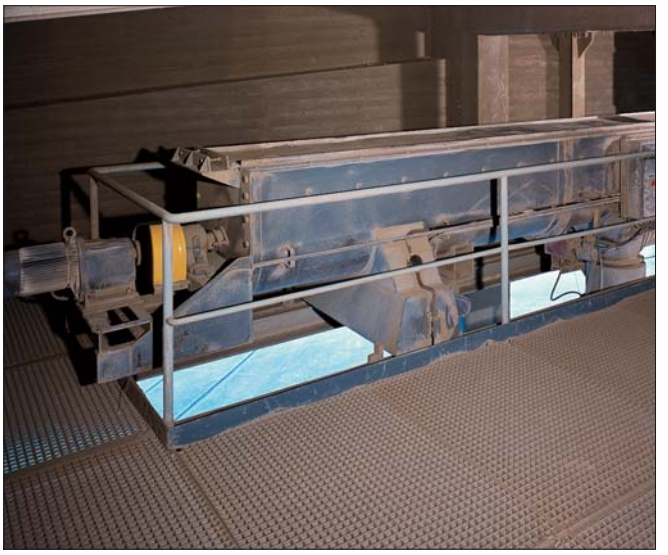
- **Hand winches** instead of motorized winches for minor applications
- **Inlet chutes** with electromotive cross slide device. If the tanker vehicle is not located exactly in the center of the loading lane it is possible to adjust the loading head position to both sides.
- **Imbalance-type vibrator** for automatic self-cleaning which is activated after each loading process to prevent dust accumulation on the vehicle.
- **Infiltrated air flap** for automatic pressure compensation of the dust extraction system.
- **Stainless steel** version.
- **Stabilized bellows** to handle stress in extreme cases of application.

Mobile loading equipment for tanker vehicles

With very large loading requirements, for example in the cement industry, stationary loading heads are no longer sufficient, particularly in those cases where the vehicle is positioned on a scale during loading and cannot be moved. The loading head must be moved to each filling spout on the vehicle. Depending on material properties and length of the vehicle, several mobile or articulated conveying units are available: These mobile conveying devices can be equipped with 1 or 2 loading heads according to the requirement.

Mobile telescoping tube

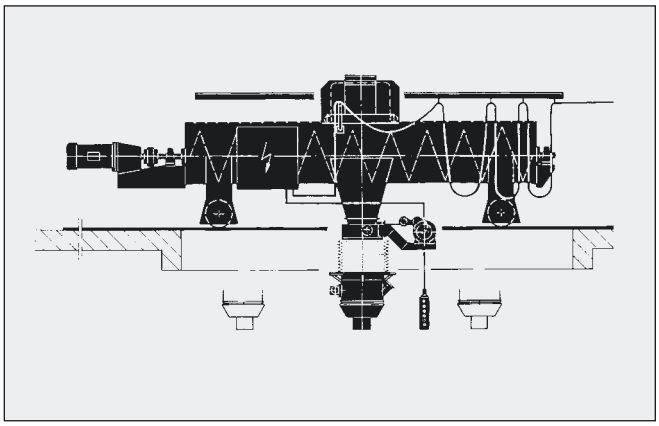
Cantilever double mobile articulated screw conveyor



Mobile screw conveyor

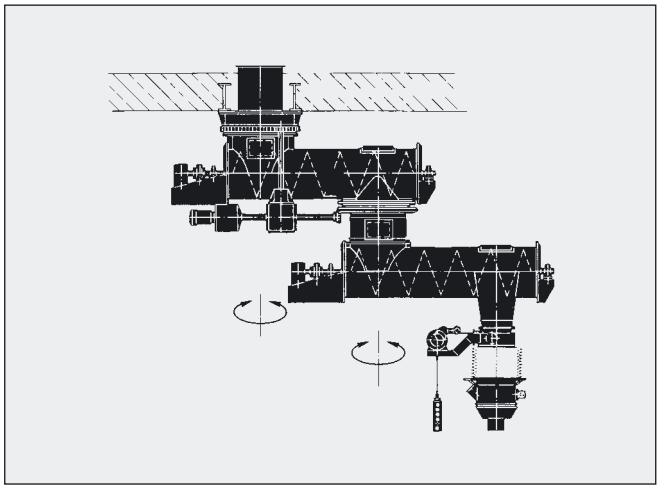
Single mobile articulated screw conveyor

Mobile loading equipment for tanker vehicles

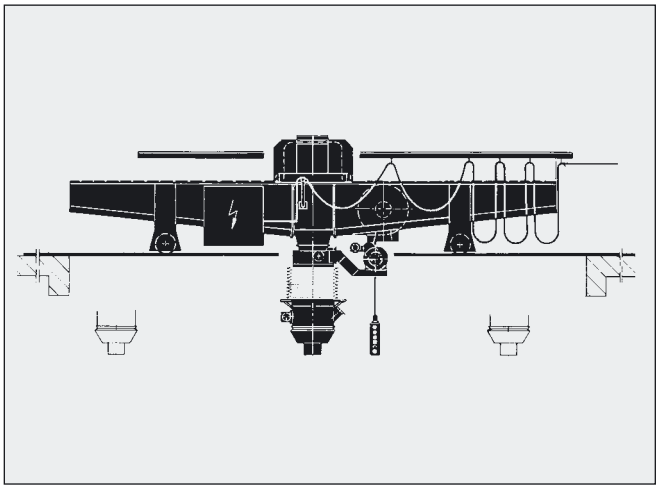


Mobile screw conveyor

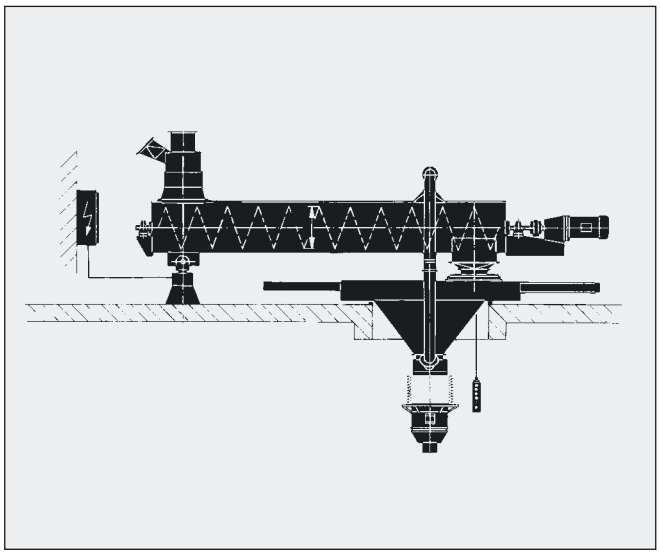
Cantilever double mobile articulated screw conveyor



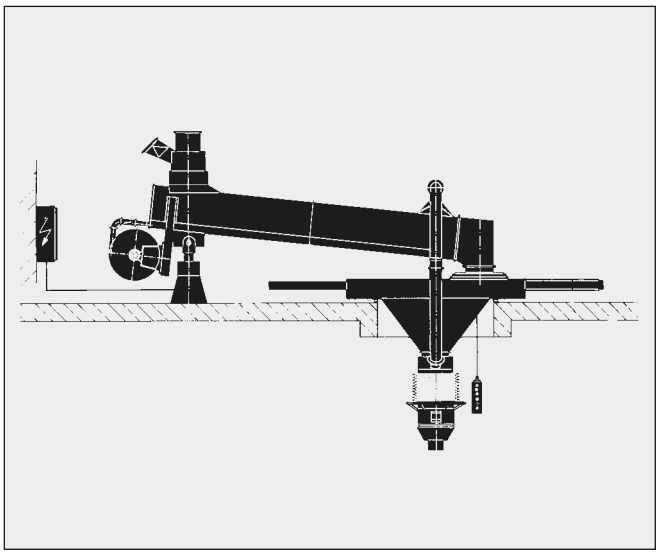
Mobile airslide



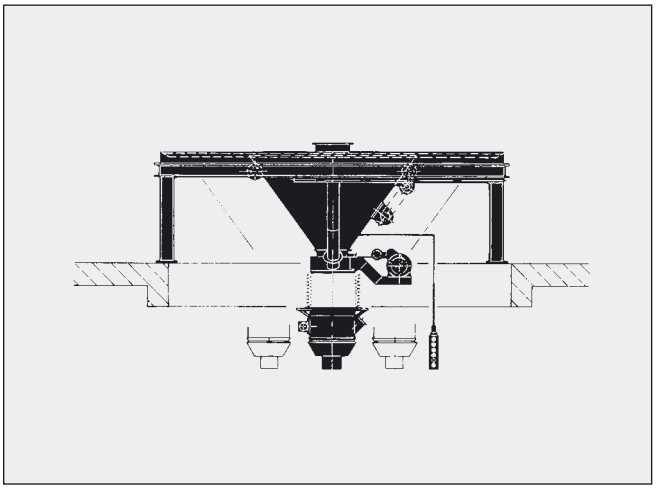
Single mobile articulated screw conveyor



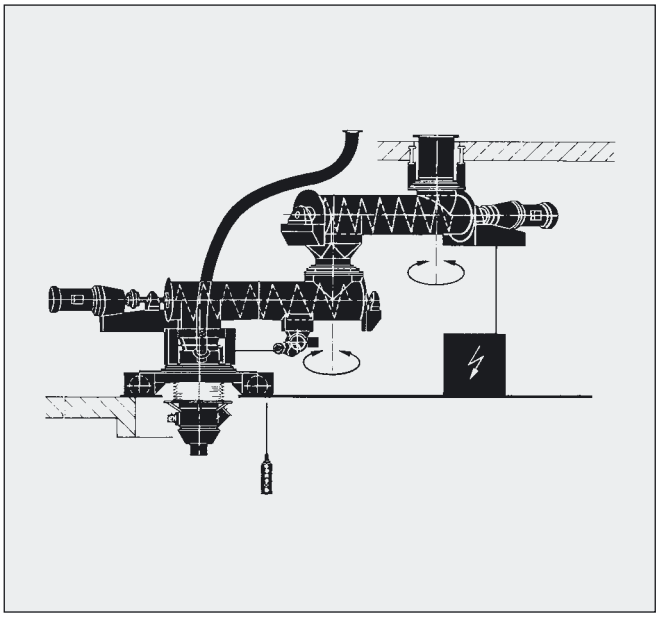
Single mobile articulated airslide



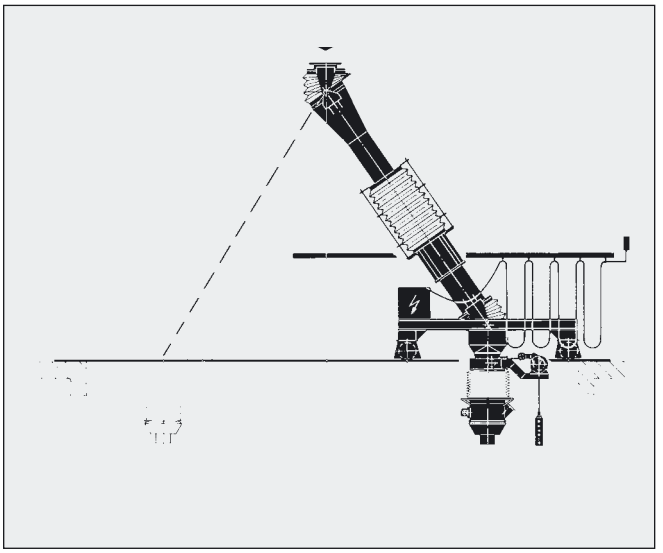
Mobile hopper



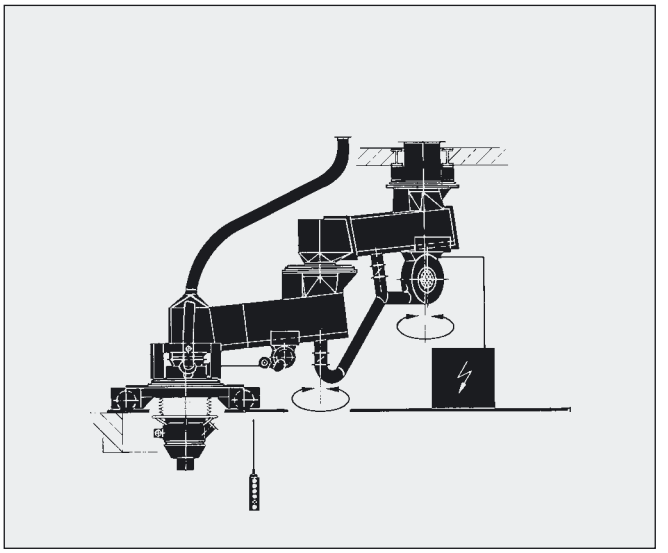
Double mobile articulated screw conveyor



Mobile telescoping tube



Double mobile articulated airslide



Loading equipment for open vehicles

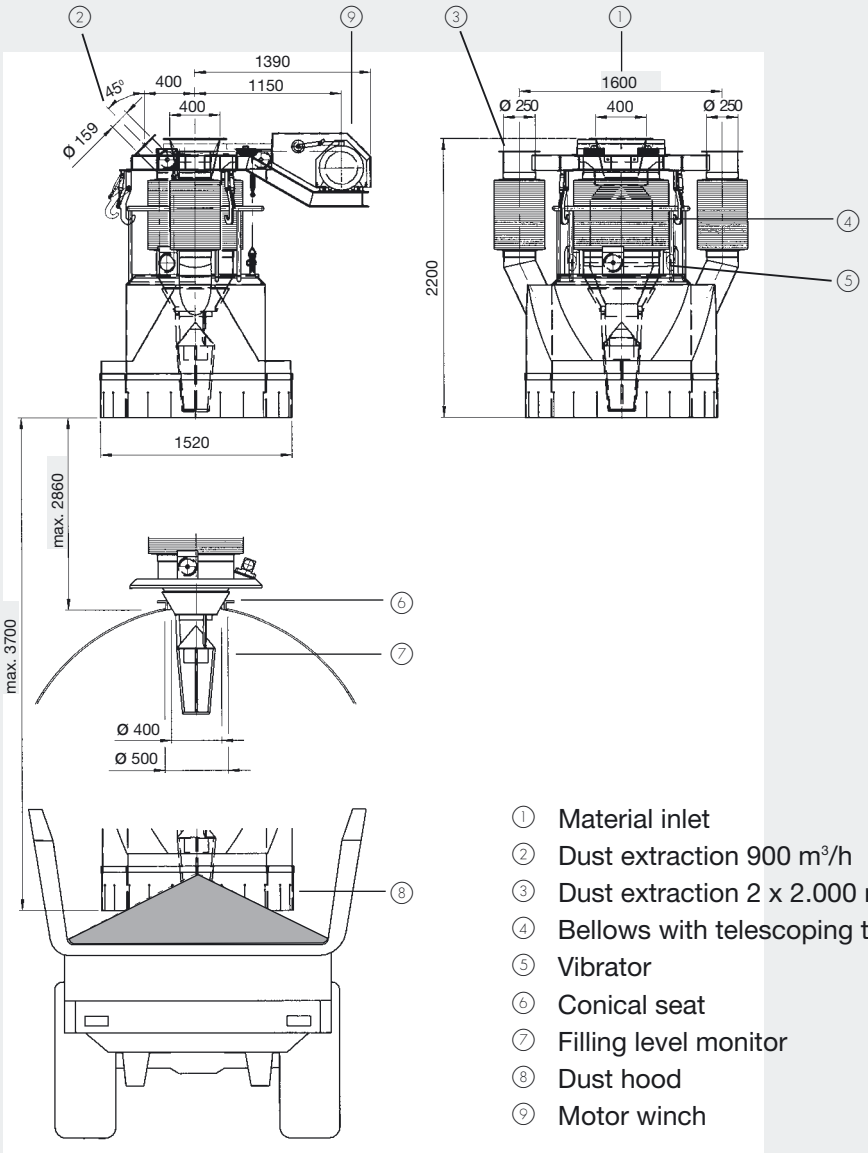
For dust-free loading of open vehicles, various types of telescoping loading systems are available. At the start of the loading process, the head is lowered to the base of the vehicle and material feed is switched on. The unit is raised automatically by a filling level monitor located at the lower end of the conical valve which is dampened by the upward material. The bottom of the conical valve always remains on top of the material so that no dust can escape to the outside. The dust extraction bellows or telescoping tubes are connected to a central dust suppresion air system. Material is fed in by corresponding equipment or rotating gates.

Dust-free loading
of open vehicles with
Portland cement clinker

Loading stations in standard design

Combined loading head for tankers and open vehicles Capacity to approx. 250 m³/h

When loading tanker vehicles, the conical valve with rubber apron is automatically secured in its uppermost position with 3 hooks. This type of loading head is not equipped with a sealing cone. The filling level monitor is firmly mounted underneath the outlet flange.

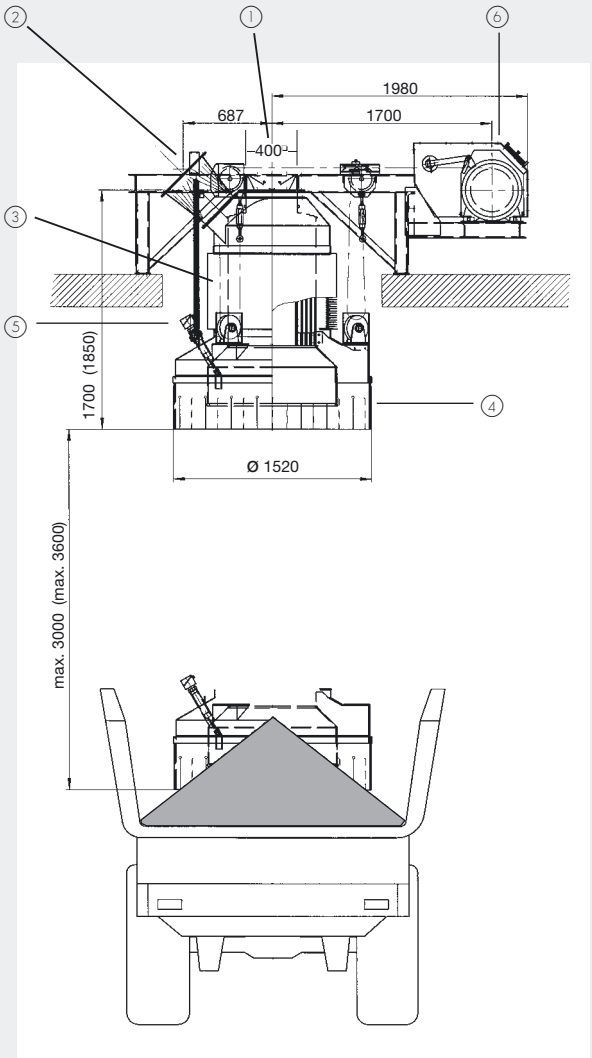


① Material inlet
② Dust extraction 900 m³/h
③ Dust extraction 2 x 2.000 m³/h
④ Bellows with telescoping tube
⑤ Vibrator
⑥ Conical seat
⑦ Filling level monitor
⑧ Dust hood
⑨ Motor winch

Loading stations in standard design

Loading head I
Capacity to approx. 300 m³/h

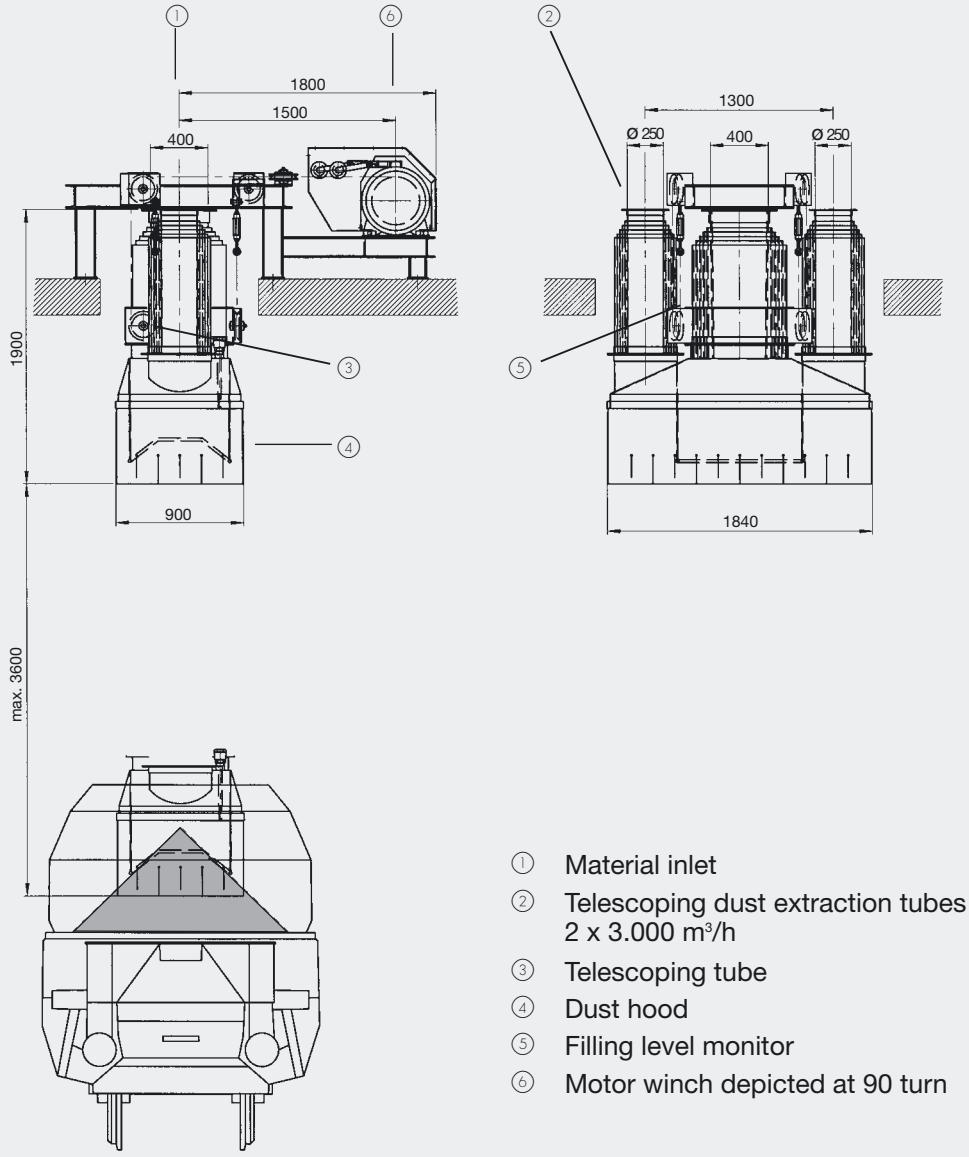
This loading head is used for fine and lumpy material and can be connected to a dust extraction system for up to 6.000 m³/h.



1. Material inlet
2. Dust extraction 6.000 m³/h
3. Bellows with telescoping tube
4. Dust hood
5. Filling level monitor
6. Motor winch

Loading head II
Capacity to approx. 300 m³/h

This unit is utilized when the dust suppression system has to meet particularly high demands. The dust extraction capacity is 6.000 m³/h or more.



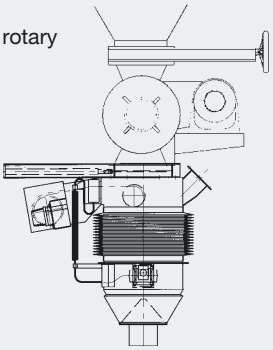
1. Material inlet
2. Telescoping dust extraction tubes 2 x 3.000 m³/h
3. Telescoping tube
4. Dust hood
5. Filling level monitor
6. Motor winch depicted at 90 turn

Material feed and metering

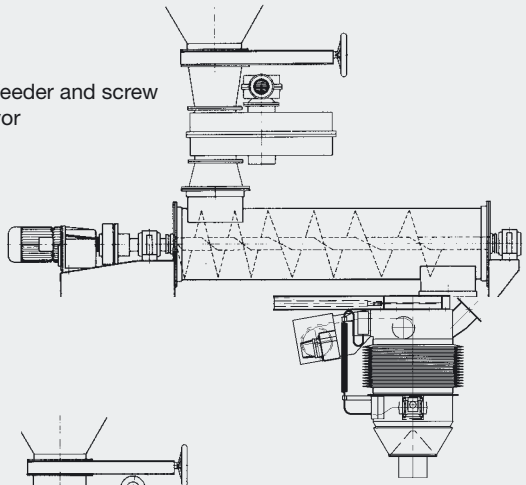
Metering systems for stationary loading units. The same metering devices can also be used for mobile loading equipment.

Metering devices for powder

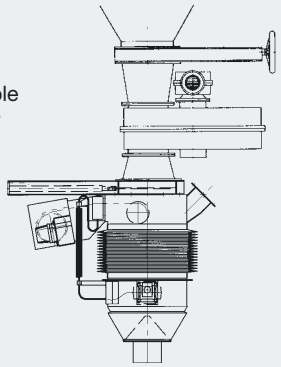
horizontal rotary feeder



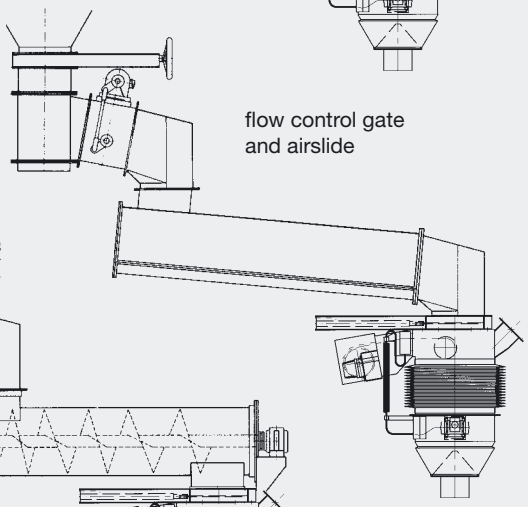
rotary feeder and screw conveyor

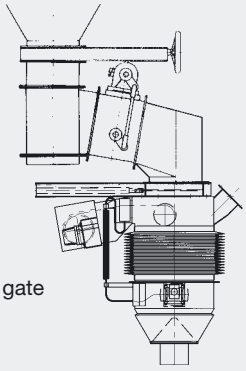


vertical double rotary feeder



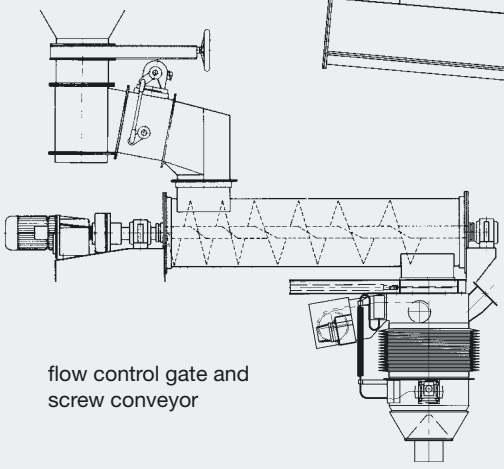
flow control gate and airslide





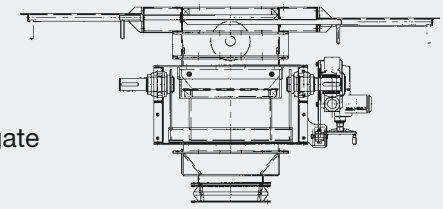
flow control gate

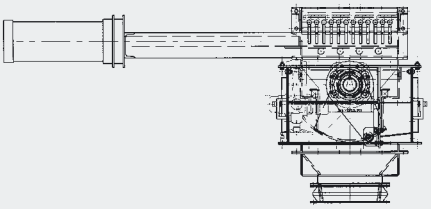
flow control gate and screw conveyor



Metering devices for ganular and lumpy bulk material

- pin gate
- emergency flat slide gate
- flow control gate



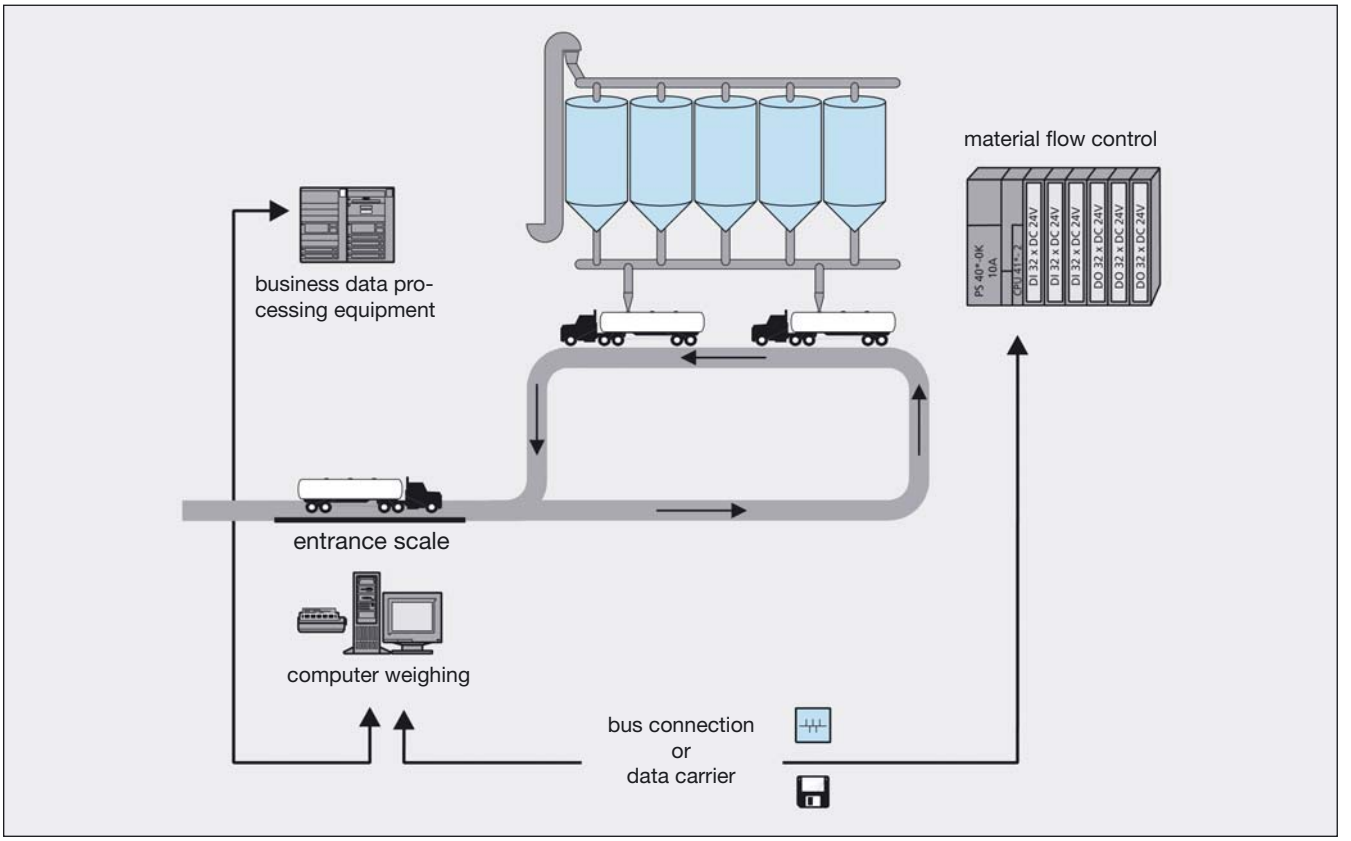


BEUMER Automatic dispatch control systems

Today bulk material loading stations are checked and controlled automatically. Integration as well as dispatch logistics often require a tailor-made concept.

BEUMER offers solutions for the specific requirements of each customer from single loading controls to full material flow control. These are implemented using the following system components which have been tested and tried many times.

- material flow control via SPS
- computers for processing weighing information and customer data, implemented as Windows NT work station
- connection between material flow control and computer weighing system via field bus system or alternative via data carrier with corresponding input and output terminals



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PROGRAM OF SUPPLY

CONVEYING TECHNOLOGY

- Conventional and closed belt conveyor systems
- Overland conveyors also in curved design
- High capacity belt and chain bucket elevators
- Apron conveyor systems with chains or steel cable reinforced belts as traction element
- Bag handling systems for packing plants
- Screw conveyors in various designs

LOADING TECHNOLOGY

- Plants for loading of bulk or bagged material onto trucks, into railroad vehicles and ships
- Semiautomatic railcar unloading machines
- Automatic bag loading systems for trucks and containers

PALLETIZING TECHNOLOGY

- Palletizing robots
- Automatic high capacity palletizers
- Automatic depalletizers
- Pallet conveying systems

PACKAGING TECHNOLOGY

- Stretch wrapping
- Shrink wrapping
- Stretch hood wrapping
- Palletless shrink wrapping

SORTATION AND DISTRIBUTION SYSTEMS

- Computer-controlled handling, sorting and distributing systems for piece goods
- Routing controlled conveying of pallets and collected loads

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