LUTENAVAKUUM

Overview Catalogue for Industrial Vacuum Conveying

- Vacuum conveyor
- Special solutions
- Filter development
- Big Bag stations
- Services

Easy Conveying

Specialists in vacuum conveying technology – for over 20 years

As a successful company based in the business city of Hamburg, we have been serving companies throughout Germany for years and now also operate across Europe. The reliable support that we offer our customers and the development of our own patented engineering solutions have allowed us to make a good name for ourselves.

As specialists in industrial vacuum conveying, we are regarded as the first port of call for production optimization and also for assistance in the development of completely new plants. New innovations and the extension of our product range will ensure that we will remain an expert partner for our clients in the future as well. New innovations and the extension of our product range will ensure that we will remain an expert partner for our clients in the future as well.

VACUUM CONVEYING TEC.

Page 14–19

BIG-BAG STATIONS

Page 20–21

PECIAL SOLUTIONS

Page 22–23

DUST AND PARTICLE FILTERS

Page 24–25

MODULES AND EXTENSIONS

Page 26–35

PNEUMATIC SUPPLIES

Page 36–37

LUTENA-VAKUUM
Easy Conveying

Main Catalogue for Industrial Vacuum Conveying

2025 edition

Subject to change without notice!

Only FDA-approved materials are used for contact with products in Lutena vacuum conveyors.

TÜV AUSTRIA

Explosive areas

Table of Contents:

The principle of vacuum conveying 4

1. Components of a conveyor system 5
2. Function of a vacuum conveyor 5
3. Modular design of our vacuum conveyors 6
4. Function of a vacuum pump 6
5. Filters for vacuum conveyor systems 7
6. AirShock tanks 8
7. Product inlet 8
8. Bottom valve with free-flow valve technology 8
9. Product intake 9
10. Transport lines 10
11. Product discharge / transition pieces 11
12. The conveying properties of bulk materials
13. Materials and products 12

The conveying properties of bulk materials 12

1. Transported material 12
2. Material flow in a conveyor system 12
3. Classification of the material 12
4. Flow properties 12
5. Bulk density 12
6. Particles 13
7. Sensitivity to moisture (hygroscopicity) 13
8. Risk of explosion 13
9. Hazardous and toxic substances 13

Product range 14

Vacuum conveyors 14
Big Bag stations – LUTENA BagStar* 20
Special solutions 22
Filter development 24
Product feed 26
Modules and extensions 32
Accessories 34
Pneumatic items 36

Email enquiry to arrange a meeting 38

About Lutena-Vakuum GmbH 39

The unbeatable advantages of vacuum conveying

- Easy installation
- Dust-free conveying
- Easy cleaning
- Minimal maintenance
- Automatic filter cleaning
- Low noise level
- Low energy consumption
- Fully pneumatic operation and control
- Flexible modular system

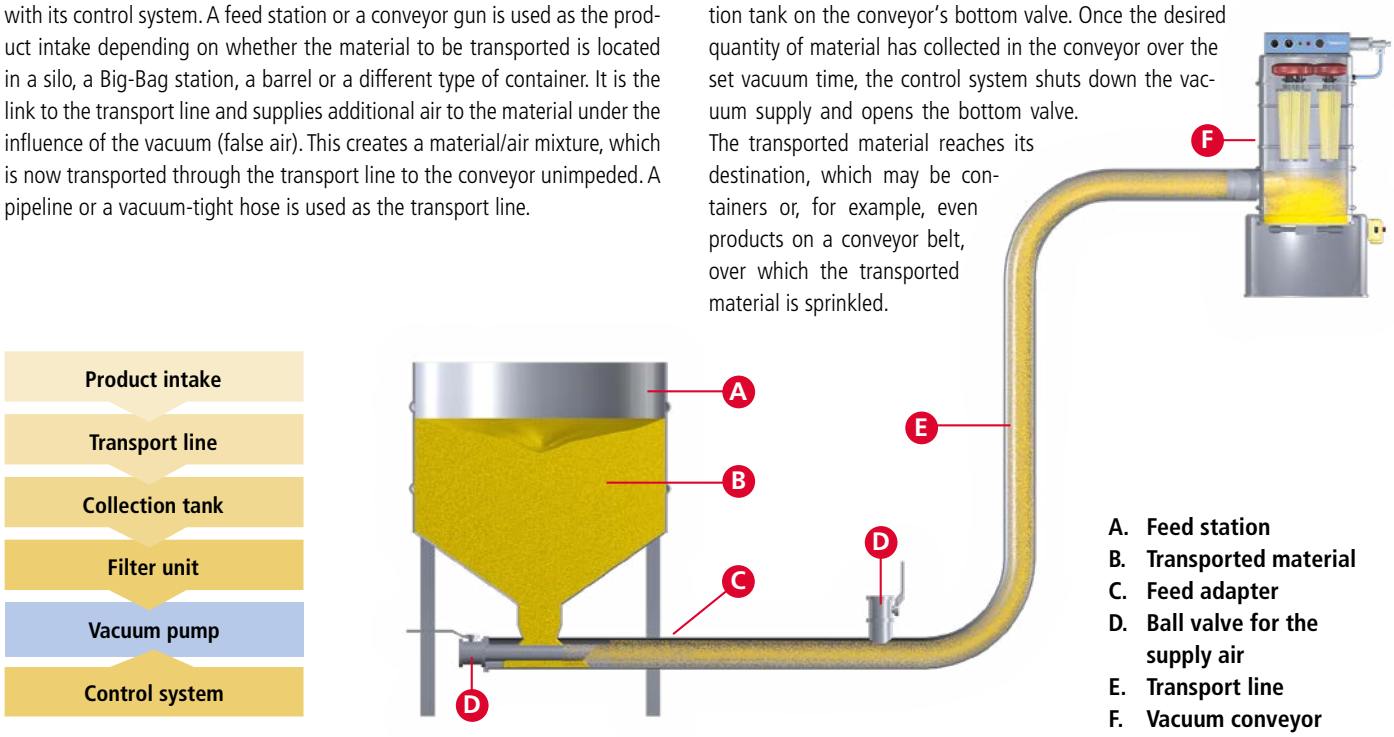
Individual configurations!
Give us a call on: +49 [0]4181 / 39502

The principle of vacuum conveying

1. Components of a conveyor system

The minimum configuration of a complete conveyor system consists of at least one product intake, one transport line and the actual vacuum conveyor with its control system. A feed station or a conveyor gun is used as the product intake depending on whether the material to be transported is located in a silo, a Big-Bag station, a barrel or a different type of container. It is the link to the transport line and supplies additional air to the material under the influence of the vacuum (false air). This creates a material/air mixture, which is now transported through the transport line to the conveyor unimpeded. A pipeline or a vacuum-tight hose is used as the transport line.

Once the transported material has reached the vacuum conveyor, filters separate the air from the material/air mixture and it collects in the collection tank on the conveyor's bottom valve. Once the desired quantity of material has collected in the conveyor over the set vacuum time, the control system shuts down the vacuum supply and opens the bottom valve. The transported material reaches its destination, which may be containers or, for example, even products on a conveyor belt, over which the transported material is sprinkled.

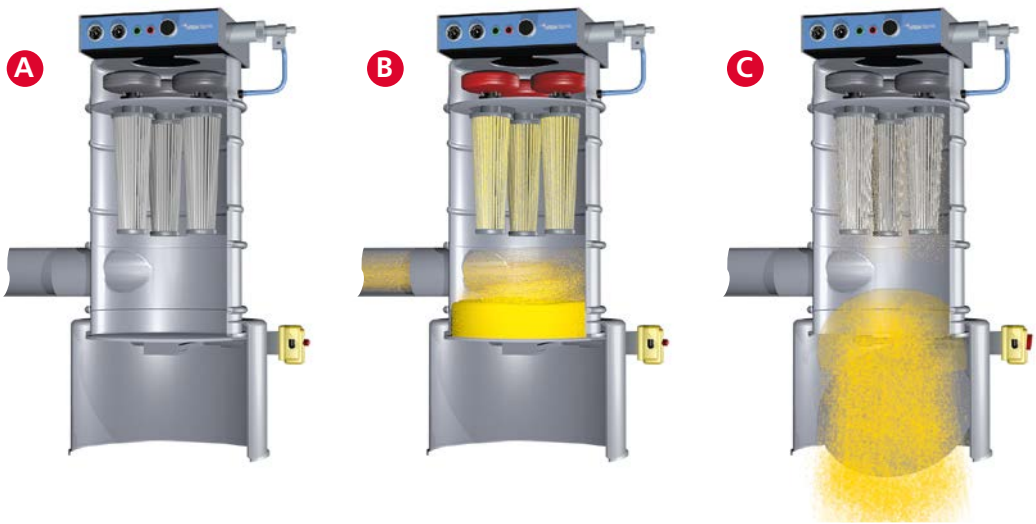


A. Feed station
B. Transported material
C. Feed adapter
D. Ball valve for the supply air
E. Transport line
F. Vacuum conveyor

2. Function of a vacuum conveyor

While the bottom valve is closed, the vacuum pumps generate a vacuum in the housing. The material to be transported is sucked in through the pipeline and collects in the collection tank on the closed bottom valve. During this process, swirling material adheres to one or more filters in the top section of the housing. At the same time, overpressure is generated in the AirShock tanks, which are each connected to a filter.

The vacuum pump switches off once the set transport time expires. The bottom valve opens and the transported material is discharged down and out of the tank. At the same time, the filters are back-flushed via the stowed compressed air from the AirShock tanks. The bottom valve then closes and the process can start again. The process continues in a set rhythm, without restriction, depending on the setting.



A. Valve closed, pump on
B. Suction cycle and AirShock pressure build-up
C. Pump off, valve open and filter back-flushing

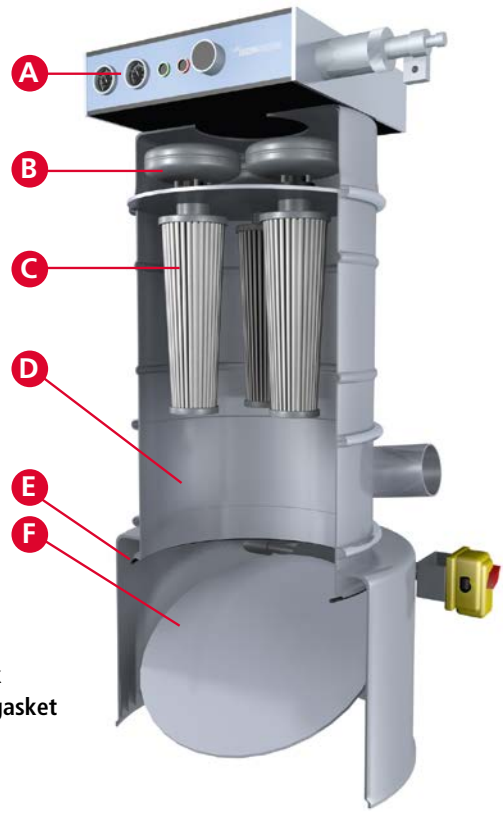
The principle of vacuum conveying

3. Modular design of our vacuum conveyors

Our standard models can be viewed as the basic equipment for different, typical applications and transport quantities. In practice, almost all conveyor systems that we deliver are individually customised to deal with specific requirements. This means that a different number and length of module segments and filters as well as vacuum pumps in various output classes are used. The function of the circuit and control unit is also adapted to your specific process conditions.

Despite this, our conveyors remain extremely flexible. Every segment can be adapted to changing production conditions or replaced if it is damaged.

We also provide housing made from different types of stainless steel and with different surface treatment as well as different filter types and gaskets. This depends on the chemical properties of the transported material as well as safety and environmental and hygiene requirements. It also enables the transportation of toxic substances or materials that represent an explosion hazard. It simply depends on whether screws, sand, magnesium or cereal grains are being transported.



A. Vacuum pump
B. AirShock tank
C. Filter
D. Collection tank
E. Bottom valve gasket
F. Bottom valve

Stainless steel:	**Execution:**	**Surfaces:**
(AISI) 304	standard	standard, glass beaded
(AISI) 316 /-L	optional	optional, glass beaded or polished
(AISI) 31Ti	optional	optional, glass beaded or polished

4. Functioning of a vacuum pump for vacuum conveying

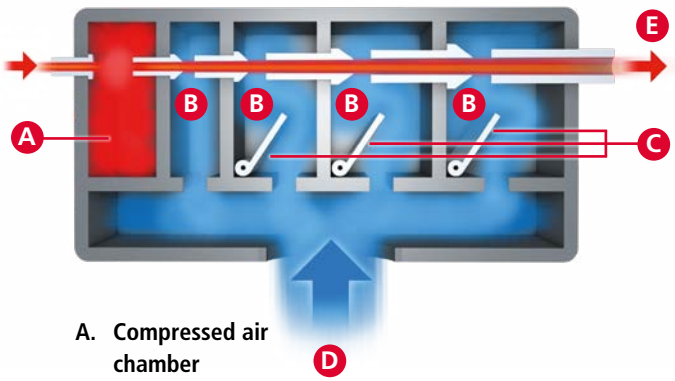
The vacuum pump mounted on the housing is operated with compressed air. If no compressed air line is available at the production site, the vacuum conveyor can also be fitted with an electric vacuum pump.

The core of the vacuum pump primarily consists of horizontally arranged chambers. The first chamber (pressure chamber) is always filled with compressed air. Openings with air nozzles are located between the chamber partitions. These are always in the same position (height and depth) so that a strong airflow can effectively flow through all the nozzles from the pressure chamber unimpeded.

This strong airflow, with its air molecules, pulls additional air molecules through the nozzles, resulting in a vacuum in these chambers. The volume of air discharged from the vacuum pump is now significantly greater than the supplied compressed air, but has lower pressure. This energy has been converted to a vacuum in the vacuum chambers and is able to transport large quantities of material over long pipelines into the conveyor's housing.

All flap valves are opened when initially establishing a vacuum. As the vacuum increases, due to the product resistance in the system. the flap valves close in succession. If the resistance decreases, e.g. because more false air is sucked in, the flap valves open automatically.

A self-regulating system.



A. Compressed air chamber
B. Vacuum chambers
C. Flap valves
D. Intake air
E. Exhaust air

5. Filters for vacuum conveyor systems

The filters in a vacuum conveyor separate the air from the material/air mixture that arrives in the conveyor. The filter stage may consist of a single filter or multiple filter elements and performs several tasks. It ensures that no particles reach the vacuum pumps, that the production facility's ambient air is not contaminated and, in the case of powdery material, that the material loss remains as low as possible.

Depending on the purpose, we provide filters in different sizes and designs as well as with different filter materials and other special design features. The right selection depends on the conveyor's output, the properties of the transported material and various other aspects, such as safety and environmental protection.

Design:
If the system is designed for a low transport capacity, cylindrical filters are used. For higher transport capacities and fine particles or adhesive powders, candle-shaped filters are generally used. If working with strong vacuums, e.g. for long transport lines, reinforced filters are the right choice. This type of differential pressure-reinforced filter has a perforated stainless steel tube in its interior that supports the filter fabric. This provides additional stability and tear-resistance.

A special design variation is the filter with folds that open at the bottom. In this case, the lower end of the filter is not closed by a cap, but by an adhered plug, which is located inside the filter sleeve. This facilitates the access of the air/material mixture and back-flushing, which is particularly beneficial for adhesive and oily materials.

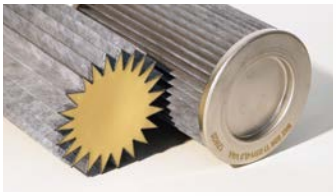
We distinguish between tight and open folds. Tight folds have a larger area due to the higher number of folds and can therefore retain more particles. But, they have a disadvantage when dealing with adhesive or sticky transport materials. After back-flushing via the AirShock tanks, particles remain in the tight folds, which has a negative impact on performance. In these cases, filters with open folds are used.

Filter material:
Three different filter materials are primarily used. Woven stainless steel is ideal for coarse-grained transported material, but fine particles would penetrate into the filter fabric. As a result, absolute filters are used in these cases. The have a Teflon coating. The particles adhere to the surface and are easy to backflush. For example, Teflon-coated polyester is suitable for paint pigments as well as for extremely fine powders. If the material has a coarser grain, such as sand or granules, aluminium-coated polyester provides better transportation and separation. Depending on the transported material, the density of the fabric also plays an important role to ensure the optimal efficiency of the conveyor system.

Which filter material is best suited for the specific application depends very much on the process.

Folds:

Internally reinforced for increased vacuum resistance



Left: Folds that open at the bottom
Right: Standard end cap

The principle of vacuum conveying

6. AirShock tanks

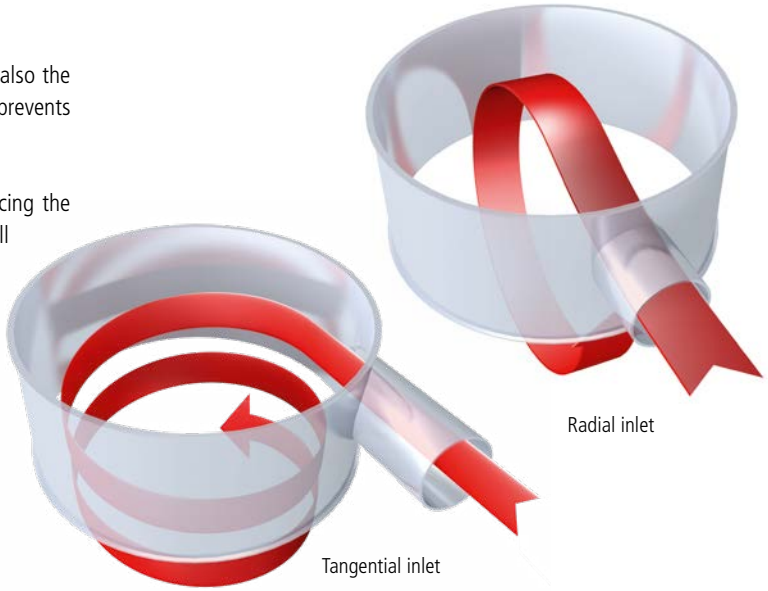
A valve charges the integrated AirShock tanks with compressed air while the vacuum conveyor is in operation. These AirShock tanks are discharged automatically once the vacuum pump stops. A special system creates a shockwave under every AirShock tank, which effectively cleans the filters.

7. Product inlet

Besides our standard configuration with tangential inlet, there is also the option of using a radial inlet with non-return valve. This primarily prevents excessive dust backflow in the transport line.

The inlet creates a vortex in the conveyor's collection tank, reducing the strain on the filter. In particular, it is ideal for materials with small particle sizes, such as powders, pigments and flour.

The radial product inlet may be more appropriate for coarser and sharp-edged transported material in some circumstances. It reduces wear on the inner side of the housing. The radial inlet counters unwanted adhesion inside the housing if oil and moist materials are transported.



Radial inlet

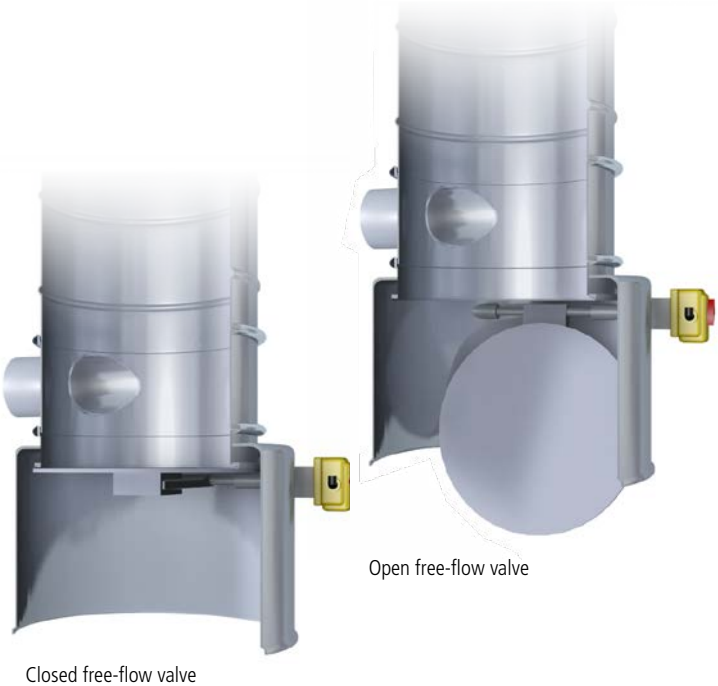
Tangential inlet

8. Bottom valve with free-flow valve technology

An important feature of all our Lutena vacuum conveyors is the free-flow valve technology. The bottom valve effectively opens across the entire housing diameter. This ensures an extremely quick and reliable product discharge.

It means that bridge formation in the housing is impossible and additional installations, such as fluidisation, beaters and vibrators are not required.

Often copied – never replicated.



Open free-flow valve

Closed free-flow valve

9. Product intake

The material to be transported can be fed into the conveyor system from various containers. We therefore provide two different processes for feeding the material into the conveyor system. A conveyor pipe removes the material to be transported from above, e.g. from sacks, barrels, tanks or cartons. This is a manual type of product extraction.

We recommend using a feed adapter to enable an automatic product intake. This can be mounted under various existing systems.

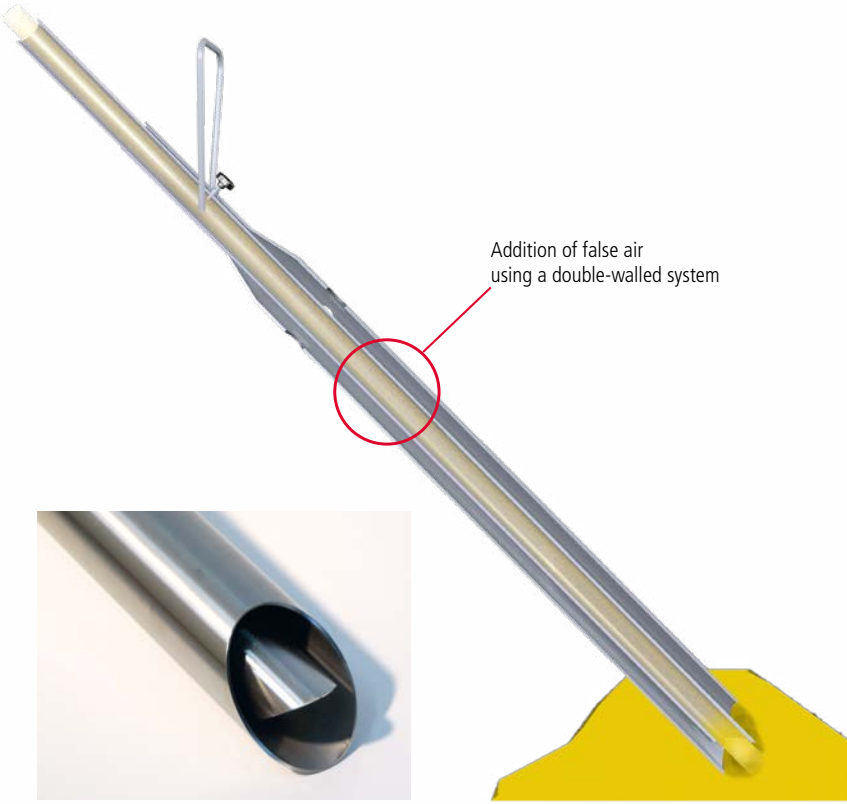
It may be a silo, a big-bag station or even a feed station into which the material is poured.

Feed adapter:
The inlet funnel of the feed adapter is directly connected to the silo or a feed station via a flange or a clamping ring. The material flows through this inlet into the underlying horizontal intake pipe, where it gathers as a plug. A small pipe with a narrow diameter is located inside this pipe, which penetrates through the material plug. This is a horizontal injector, which is connected to the intake pipe via a bushing. The vacuum suction now conveys the external air through the injector and also carries along particles of the transported material as a material/air mixture. The inflow air is controlled by a ball valve and the position of the pipe end from the injector allows the conveyor phase to be adjusted. If a large volume of air is added, this is referred to as the flow phase, which means that the material/air mixture is conducted through the conveyor line at high speed. In a dense phase, more material is transported with less air, but more vacuum power is required to prevent blockages in the transport line.

The specific conveying phase, i.e. the air to transported material ratio, that provides the optimum transport performance depends on the material.

A second false air adjustment option with ball valve adds more air (false air) along the path behind the horizontal injector and provides additional acceleration for the material flow. Air filters can be attached in front of both ball valves in order to prevent the contamination of the transported material, as they generally take in ambient air close to the ground.

Conveyor pipe:
The conveyor gun, which sucks in the material from above, may also consist of an outer and inner pipe. In contrast to a feed adapter, with its horizontal injector, in this case the material/air mixture is supplied to the conveyor line through the inner pipe. The outer pipe is used to supply false air. The mixture of material and air takes place at the tip of the conveyor gun, which is inserted into the material or bulk to be transported. The bulk material phase can also be adjusted by adjusting the inner pipe. The conveyor pipe can be mounted to a piece of equipment or can be held by hand. Bridge formation inside the housing is not possible and additional installations such as fluidisation, beaters and vibrators are not required.



Product intake by the feed pipe

Detailed view: Double-walled design

Feed adapter during the conveying process

10. Transport lines

Pipelines or vacuum-tight hoses with embedded steel spirals are used to transport the material between the product intake and the vacuum conveyor. Combinations are also possible. In general, for longer lines, conveyor systems with stainless steel pipelines are more efficient and faster, as they generate less frictional resistance. They are the best choice for stationary systems.

Transparent conveying hoses are generally used for distances up to 20m. They have the benefit of simpler and faster assembly and also give the operator the opportunity to see what is happening in the transport line. Potential blockages are easier to localise.

In both cases, the longer the line and the more vertical the line elements, the lower the output of the entire conveyor system. Using the latest state-of-the-art technology, the maximum transport length amounts to about 100 m.

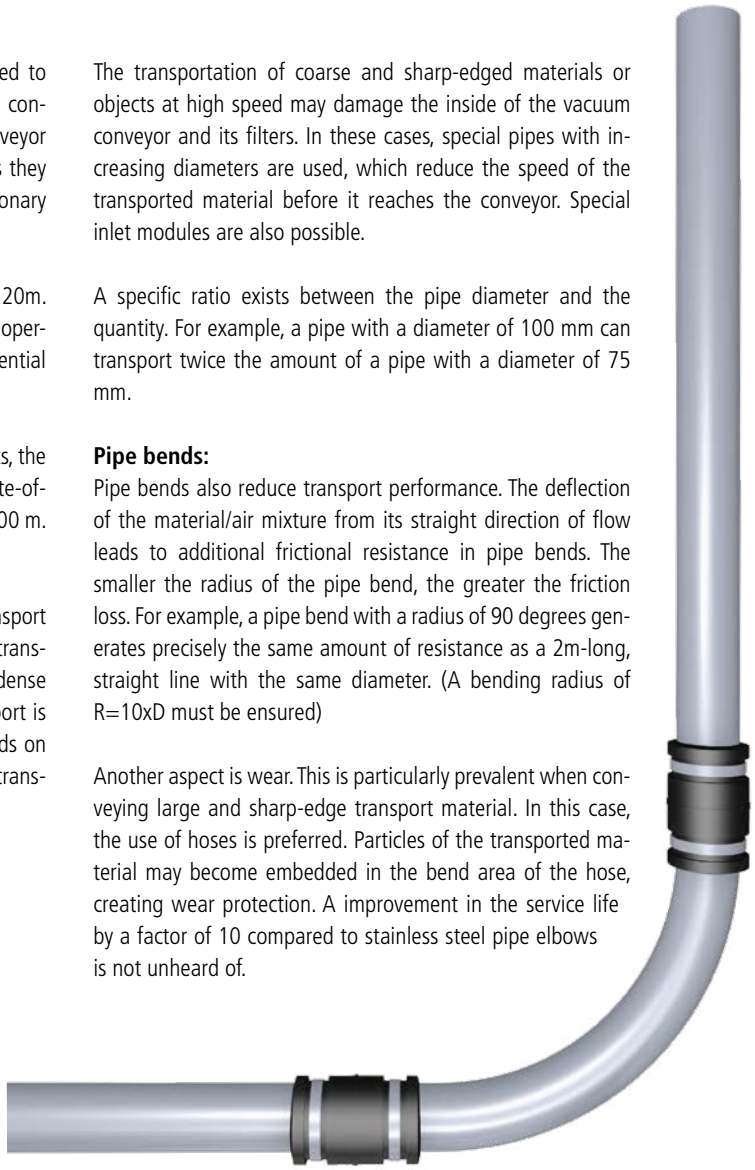
Dimensions:
Besides the capacity of the vacuum conveyor, the diameter of the transport line also plays an important role. A narrow diameter results in a higher transport speed and can increase the transport volume for materials in dense phase conveying. If the line has a larger diameter, the material transport is slower, but the susceptibility to blockages is lower. It therefore depends on the right combination of power and line cross-section based on the transported material.

The transportation of coarse and sharp-edged materials or objects at high speed may damage the inside of the vacuum conveyor and its filters. In these cases, special pipes with increasing diameters are used, which reduce the speed of the transported material before it reaches the conveyor. Special inlet modules are also possible.

A specific ratio exists between the pipe diameter and the quantity. For example, a pipe with a diameter of 100 mm can transport twice the amount of a pipe with a diameter of 75 mm.

Pipe bends:
Pipe bends also reduce transport performance. The deflection of the material/air mixture from its straight direction of flow leads to additional frictional resistance in pipe bends. The smaller the radius of the pipe bend, the greater the friction loss. For example, a pipe bend with a radius of 90 degrees generates precisely the same amount of resistance as a 2m-long, straight line with the same diameter. (A bending radius of R=10xD must be ensured)

Another aspect is wear. This is particularly prevalent when conveying large and sharp-edge transport material. In this case, the use of hoses is preferred. Particles of the transported material may become embedded in the bend area of the hose, creating wear protection. A improvement in the service life by a factor of 10 compared to stainless steel pipe elbows is not unheard of.



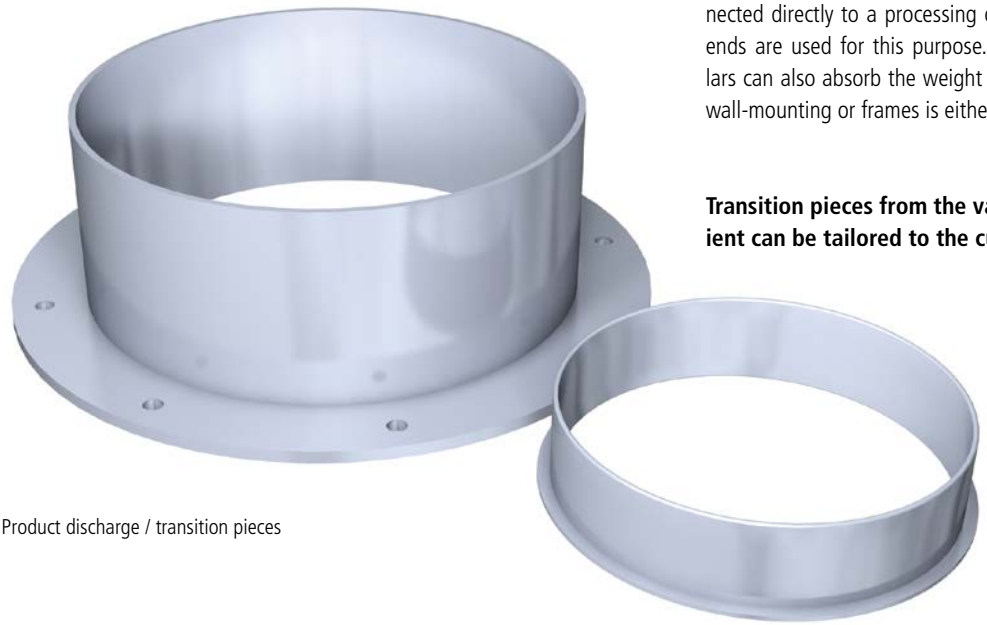
An overview of the behaviour of different pipe dimensions:

Ø 100 = 1 Lines	
Ø 75 = 2 Lines	
Ø 50 = 4 Lines	
Ø 32 = 8 Lines	

11. Product discharge / transition pieces

In completely closed systems, the outlet module can, for instance, be connected directly to a processing or bottling plant. Support collars and weld ends are used for this purpose. In particular, screw-mounted support collars can also absorb the weight of the conveyor, so the need for additional wall-mounting or frames is either partially or entirely removed.

Transition pieces from the vacuum conveyor to the product recipient can be tailored to the customer's requirements.



Product discharge / transition pieces

The transport properties of bulk goods, materials and products

1. Transported material

A vacuum conveyor system can be used to transport a range of different materials and products. This ranges from the finest powdery substances through to small items several centimetres in size. Our conveyor systems are used in the chemicals, pharmaceuticals and food industry as well as in metal and plastic processing and many other sectors of industry.

Examples:

- Powdery substances – lime, paint pigments, more…
- Granular substances – grains, coffee beans, sand, more…
- Coarse-grained substances – gravel, screws, more…
- Small items – cucumbers, diced ham, steaks, more…

2. Material flow in a conveyor system

A certain ratio between the product mass flow and the air mass flow is required to ensure the flow properties of transported goods in the system. This is referred to as the phase density.

If the product mass flow and the air mass flow are equal, no more air is located in the transport line and it is blocked. By contrast, if the phase density is equal to zero, no material is to be found in the transport line. Various phase densities occur between these two limits. We primarily distinguish between three phases. In the dense phase, the transported material moves through the transport line in individual blocks. The speed of the product is quite slow.

In the strand phase, there are different manifestations of the product/air mixture. The product is normally transported in the lower half of the pipe, while a kind of dilute-phase transport occurs in the upper half. A switch between strands and blocks is possible. The properties of the phase are heavily dependent on the product.

In the diluted phase, there is an equal distribution of the material/air mixture in the transport line. This is where the highest product speeds are reached. 20 – 40m/s are possible.

Gentle product transportation essentially occurs in the strand and dense phase. The best type of transport in the specific case depends on the product and process.

We analyse the transport capacity of materials in our laboratory for this purpose.

$$\text{Phase density} = \frac{\text{Product mass flow}}{\text{Air mass flow}}$$

3. Classification of the material

The size of a vacuum conveyor is heavily dependent on the material to be transported. This affects the diameter of the feed line, the output and quality of the conveyor and other components. The following properties are determined to classify the material.

Properties of transported material:

- Flow property/angle of repose
- Bulk density
- Wear/abrasion
- Particle size (distribution, shape, density, hardness)
- Sensitivity to moisture (hygroscopicity)
- Risk of explosion
- Level of danger/toxicity

4. Flow property

The most important requirement for the transportability of a material when using vacuum technology is its fluidity. It depends on the particle size, particle geometry as well as the electrostatic and hygroscopic properties. While granules generally display good flow properties, it is significantly poorer for other materials, such as various forms of powder.

The approximate flow property can be determined using a simple method. When material is poured in piles on a floor, it either has a raised or flat shape. The flatter the piles, the better the flow property.

5. Bulk density

The bulk density is the specific weight of the material with the air between the particles, i.e. its weight if the volume is equal to a one-litre beaker. The bulk density before the transport process is critical, as many materials can pass through various states of compression. It is important to know whether the transported material is loose or compressed under its weight.

The bulk density is important when selecting the optimal diameter of the transport line. Most materials have a bulk density of between 500 and 900 grams/litre and require a larger pipe diameter. Smaller pipe diameters are used for higher bulk densities.

6. Particles

To ensure the optimal size of the conveyor system, besides the flow properties and bulk density, attention must also be paid to the individual particles. This includes the particle weight (density), size, geometry, hardness and particle size distribution. Particle weight and size are important factors when determining the vacuum suction in order to raise the material in the transport line.

If the transported material displays different particle sizes, it has an unfavourable particle size distribution. They can become entangled, which also needs to be considered when dimensioning the system.

7. Sensitivity to moisture (hygroscopicity)

Hygroscopic substances may be deposited along the entire system during transportation and impair the filter performance. If the material agglutinates, this may block the transport line and the feed funnel. We test the respective material under realistic conditions in our laboratory and can configure the optimal conveyor system for your operation.

8. Risk of explosion

When transporting some substances, there is a risk of reaching a critical material/air mixture, which may lead to a dust explosion. This is generally triggered by electrostatic discharges. As the phase density constantly fluctuates in a vacuum conveyor system, electrostatic reactions cannot be completely ruled out. However, all components of a conveyor system are connected to the same earthing point to minimise the risk of spark formation.

Some of the most common substances at risk of explosion:

- **Aluminium**
- **Aspirin**
- **Cotton**
- **Iron**
- **Coffee**
- **Grains**
- **Cocoa**
- **Timber**
- **Coal**
- **Cork**
- **Tea**
- **Flour**
- **Sugar**
- **Nylon**

9. Hazardous and toxic substances

Vacuum conveyors can essentially be used to transport hazardous substances, as they can be installed as a completely closed system. The constant vacuum in the system also prevents contamination of the outside air if minor leaks occur. The exhaust air discharged from the vacuum pump can be cleaned by special filters or fed into an existing filter system.

Another risk prevention option is the use of a police filter stage in the vacuum conveyor. If the first filter stage is damaged, the police filter stage takes over the filtration activities until the other stage is replaced.

You can receive more information on this topic from your competent occupational health and safety authority.

Lutena-Vakuum vacuum conveyors…

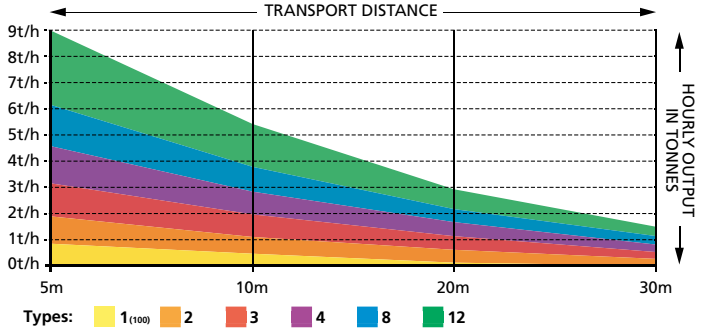
State-of-the-art vacuum technology is used for transporting all kinds of materials. In principle, this involves the same technology used in a vacuum cleaner – the only difference lies in the transported material, the applications and the power class. Boost your productivity by transporting materials more effectively. In a vacuum conveying system, materials are conveyed in a completely closed system. Heavy lifting, dusty processing rooms and other sources of contamination are a thing of the past.

VACUUM CONVEYING TEC.

The right power class for your activities

The size of the conveyor system depends on the properties of the transported material. Use the material properties to find the right solution:

Material specification, fluidity/angle of repose, bulk density, wear and abrasion, particle size (distribution, shape, density, hardness), sensitivity to moisture, risk of explosion, level of danger/toxicity.



Use the type designation to determine the configuration of the vacuum conveyor

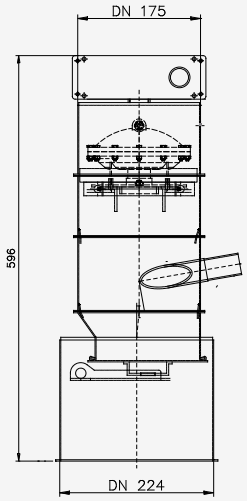
The type designation is particularly helpful when checking the performance of the conveyor. It lets you determine the filters and spare parts that are appropriate for your conveyor.

The Lutena-Vakuum control unit

All of our vacuum conveyors can be delivered with and without a control unit. Conveyors without a control unit can easily be retrofitted.

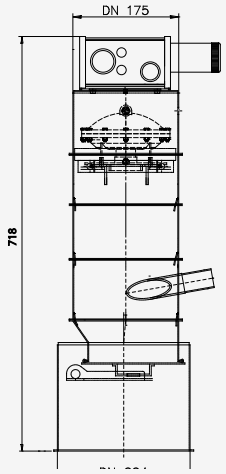
Vacuum conveyors

LEC 150-1 — Vacuum conveyor



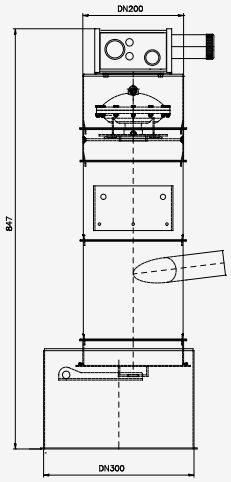
Housing:	Vacuum conveyor made of stainless steel (DIN 1.4301 (AISI (TP) 304))
Surface quality:	Glass beaded
Gaskets:	Modules: EPDM / Bottom value: NBR
Vacuum pump:	Air driven Vacuum pump with a max. Airflow of 54 Nm³/h, Vacuum level 74 kPa, Air consumption at 70% working time 3,5 - 5 Nl/s at 4-6 bar feed pressure
Noise level:	60 - 65 dBA
Ambient temperature:	- 20 - + 80°C
Filter types / Number:	LVPT01 1 piece
AirSchock:	Integrated automatic AirSchock for filter cleaning after each conveying cycle
Suction connection:	Tangential Inlet DN 32
Delivery contents:	Free flow bottom valve with pneumatic actuator DN 150
Weight:	app. 12 kg (depending on equipment)
Transport capacities:	At 10 m: 0,3- 0,8 t/h (Depending on the product and conveying route)

LEC 150-2 — Vacuum conveyor



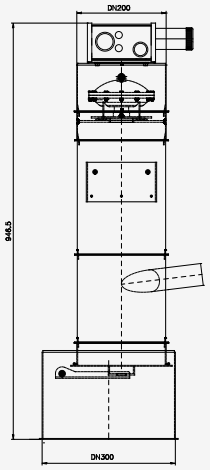
Housing:	Vacuum conveyor made of stainless steel (DIN 1.4301 (AISI (TP) 304))
Surface quality:	Glass beaded
Gaskets:	Modules: EPDM / Bottom value: NBR
Vacuum pump:	Air driven Vacuum pump with a max. Airflow of 144 Nm³/h, Vacuum level 74 -92 kPa, Air consumption at 70% working time 8 - 10 Nl/s at 4-6 bar feed pressure
Filter types / Number:	LVPT02-02, LVPT02-04, LVT820-20 1 piece
Noise level:	72 -76 dBA
Ambient temperature:	- 20 - + 80°C
AirSchock:	Integrated automatic AirSchock for filter cleaning after each conveying cycle
Suction connection:	Tangential Inlet DN 40 or DN 50
Delivery contents:	Free flow bottom valve with pneumatic actuator DN 150
Weight:	app. 17 kg (depending on equipment)
Transport capacities:	At 10 m: 0,4 - 1,0 t/h (Depending on the product and conveying route)

LEC 200-2 — Vacuum conveyor

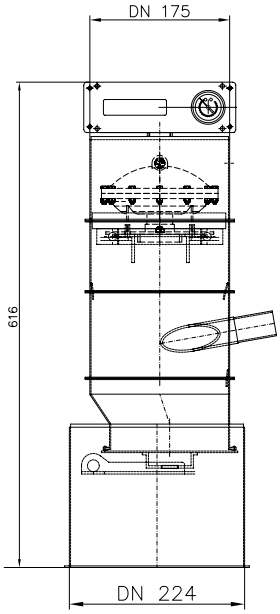


Housing:	Vacuum conveyor made of stainless steel (DIN 1.4301 (AISI (TP) 304))
Surface quality:	Glass beaded
Gaskets:	Modules: EPDM / Bottom value: NBR
Vacuum pump:	Air driven Vacuum pump with a max. Airflow of 144 Nm³/h, Vacuum level 74 -92 kPa, Air consumption at 70% working time 8 - 10 Nl/s at 4-6 bar feed pressure
Noise level:	72 -76 dBA
Ambient temperature:	- 20 - + 80°C
Filter types / Number:	LVPT02-02, LVPT02-04, LVPT03-04, LVPT03-08, LVT820-20, LVT830-30 1 piece
AirSchock:	Integrated automatic AirSchock for filter cleaning after each conveying cycle
Suction connection:	Tangential Inlet DN 50
Delivery contents:	Free flow bottom valve with pneumatic actuator DN 200
Weight:	app. 20 kg (depending on equipment)
Transport capacities:	At 10 m: 0,6 - 1,3 t/h (Depending on the product and conveying route)

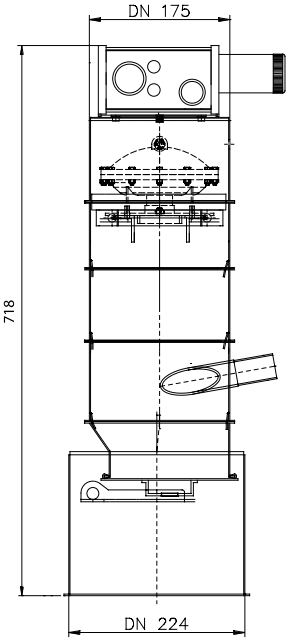
LEC 200-4 — Vacuum conveyor



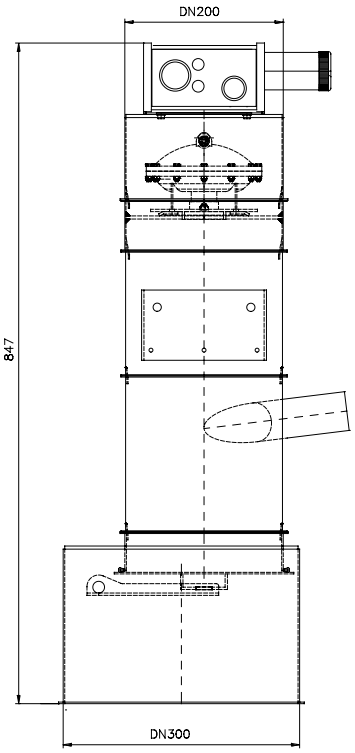
Housing:	Vacuum conveyor made of stainless steel (DIN 1.4301 (AISI (TP) 304))	
Surface quality:	Glass beaded	
Gaskets:	Modules: EPDM / Bottom value: NBR	
Vacuum pump:	Air driven Vacuum pump with a max. Airflow of 300 Nm³/h, Vacuum level 74 kPa, Air consumption at 70% working time 14 - 20 Nl/s at 4-6 bar feed pressure	
Noise level:	72 -76 dBA	
Ambient temperature:	- 20 - + 80°C	
Filter types / Number:	LVPT02-02, LVPT02-04, LVPT03-04, LVPT03-08, LVT820-20, LVT830-30	1 piece
AirSchock:	Integrated automatic AirSchock for filter cleaning after each conveying cycle	
Suction connection:	Tangential Inlet DN 50	
Delivery contents:	Free flow bottom valve with pneumatic actuator DN 200	
Weight:	21 kg (depending on equipment)	
Transport capacities:	At 10 m: 0,8 - 2,5 t/h (Depending on the product and conveying route)	



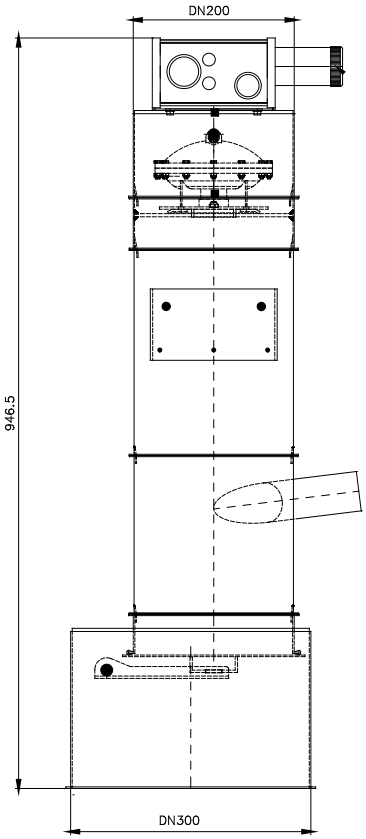
LEC 150-1



LEC 150-2



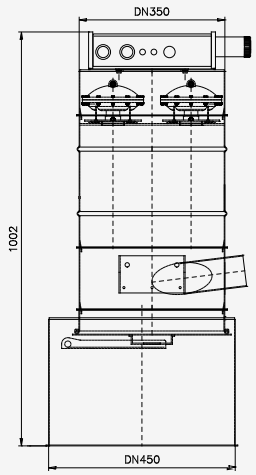
LEC 200-2



LEC 200-4

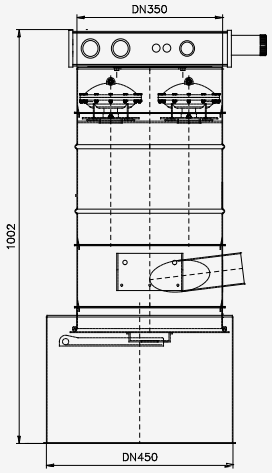
Vacuum conveyors

LEC 350-8 — Vacuum conveyor



Housing:	Vacuum conveyor made of stainless steel (DIN 1.4301 (AISI 304)	
Surface quality:	Glass beaded	
Segments:	Modules dismountable through clamp rings	
Gaskets:	Modules: EPDM / Bottom value: NBR	
Vacuum pump:	Air driven Vacuum pump with a max. Airflow of 576 Nm³/h, Vacuum level 74 -92 kPa, Air consumption at 70% working time 28 - 40 Nl/s at 4-6 bar feed pressure	
Noise level:	72 - 76 dBA	
Ambient temperature:	-20°C – +80°C	
Filter types / Number:	LVPT02-02, LVPT02-04, LVPT03-04, LVPT03-08, LVT820-20, LVT830-30	3 pieces
AirSchock:	Integrated automatic AirSchock for filter cleaning after each conveying cycle,	
Suction connection:	Tangential Inlet DN 75	
Delivery contents:	Free flow bottom valve with pneumatic actuator DN350	
Weight:	app. 40 kg (depending on equipment)	
Transport capacities:	At 10 m: ,4 - 4,5 t/h (Depending on the product and conveying route)	

LEC 350-12 — Vacuum conveyor

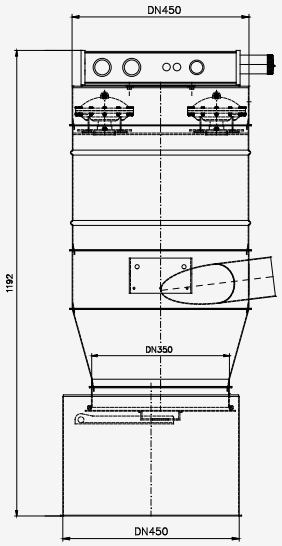


Housing:	Vacuum conveyor made of stainless steel (DIN 1.4301 (AISI 304)	
Surface quality:	Glass beaded	
Segments:	Segmente Modules dismountable through clamp rings	
Gaskets:	Modules: EPDM / Bottom value: NBR	
Vacuum pump:	Air driven Vacuum pump with a max. Airflow of 867 Nm³/h, Vacuum level 74 -92 kPa, Air consumption at 70% working time 42 - 60 Nl/s at 4-6 bar feed pressure	
Noise level:	72 - 76 dBA	
Ambient temperature:	-20°C – +80°C	
Filter types / Number:	LVPT02-02, LVPT02-04, LVPT03-04, LVPT03-08, LVT820-20, LVT830-30	3 pieces
AirSchock:	Integrated automatic AirSchock for filter cleaning after each conveying cycle	
Suction connection:	Tangential Inlet DN 75	
Delivery contents:	Free flow bottom valve with pneumatic actuator DN350	
Weight:	app. 42 kg (depending on equipment)	
Transport capacities:	At 10 m: 2,5 - 6,0 t/h (Depending on the product and conveying route)	

Customised production

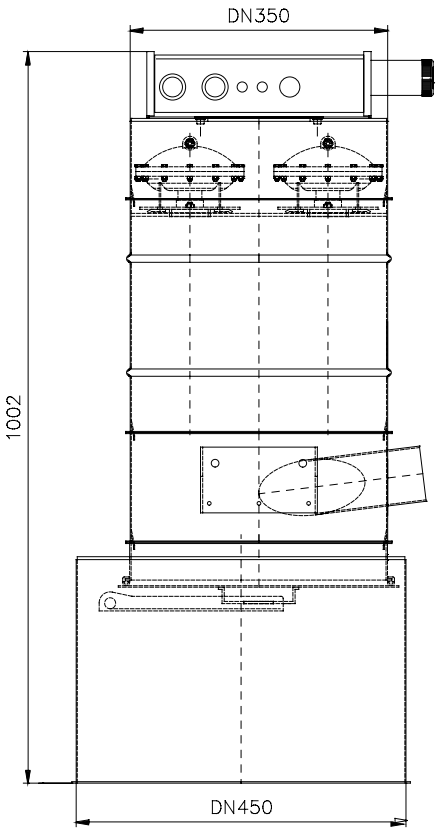
The modular system of Lutena Vacuum conveyor allows defined configuration. This ensures that you receive a system that is perfectly tailored to your process conditions. Subsequent extensions and changes can be implemented without any problems.

LEC 450-12 — Vacuum conveyor

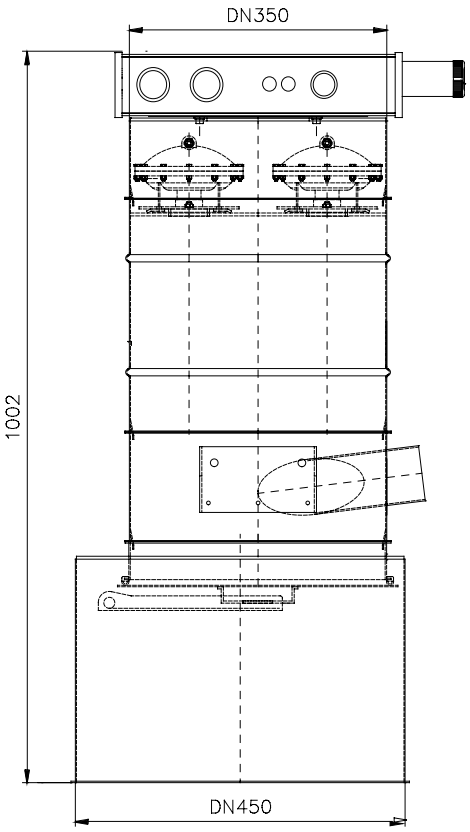


Housing:	Vacuum conveyor made of stainless steel (DIN 1.4301 (AISI (TP) 304))	
Surface quality:	Glass beaded	
Segments:	Segmente Modules dismountable through clamp rings	
Gaskets:	Modules: EPDM / Bottom value: NBR	
Vacuum pump:	Air driven Vacuum pump with a max. Airflow of 867 Nm³/h, Vacuum level 74 -92 kPa, Air consumption at 70% working time 42 - 60 Nl/s at 4-6 bar feed pressure	
Noise level:	72 - 76 dBA	
Ambient temperature:	-20°C – +80°C	
Filter types / Number:	LVPT02-02, LVPT02-04, LVPT03-04, LVPT03-08, LVT820-20, LVT830-30	5 pieces
AirSchock:	Integrated automatic AirSchock for filter cleaning after each conveying cycle	
Suction connection:	Tangential Inlet DN 100	
Delivery contents:	Free flow bottom valve with pneumatic actuator DN350	
Weight:	ca. 65 kg (depending on equipment)	
Transport capacities:	At 10 m: 3,0 - 10,0 t/h (Depending on the product and conveying route)	

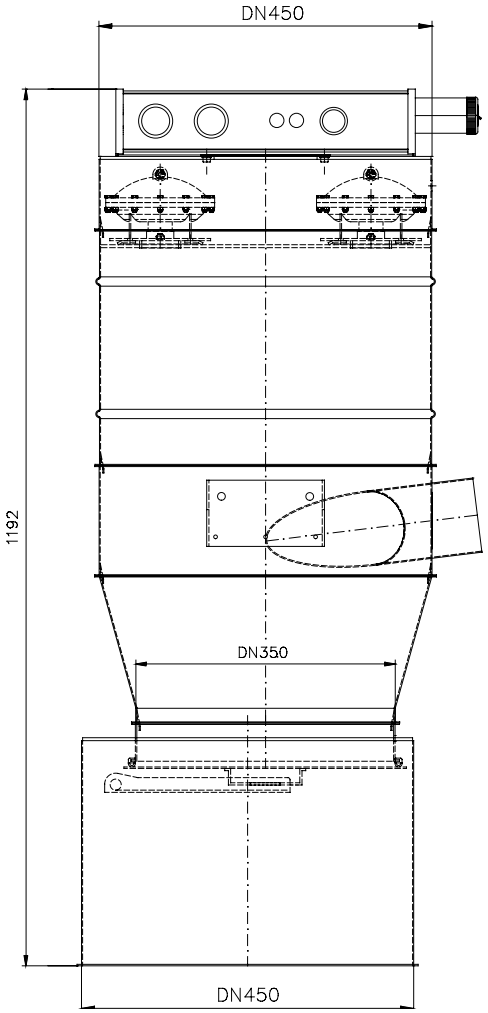
An additional containder module with a height of 320 mm must be used with filter types LVPT06 or LVVA06. The overall height changes accordingly.



LEC 350-8



LEC 350-12



LEC 450-12

LUTENA-BagStar*

The Big Bag Station for vacuum conveying

This practical Big Bag Station for vacuum conveying is one of our latest products. It offers several advantages compared to a smaller silo. The filling funnel, pipe connections, filters and taps are already pre-installed. This means that it can be easily connected directly with the pipeline of a vacuum conveying system. In addition, LUTENA-BagStar is highly versatile in terms of its usage, is easy to transport and is also very cost-effective.

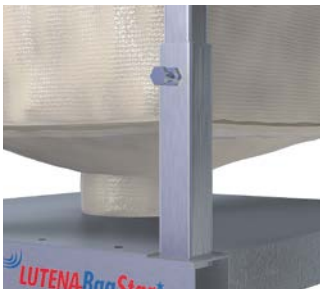
BIG-BAG STATIONS

Individual configurations!
Give us a call on: +49 [0]4181 / 39502

The practical benefits of LUTENA-BagStar:

- **Can be used directly for vacuum conveying**
- **Portable and easy to transport**
- **Individual configurations**
- **Low costs**

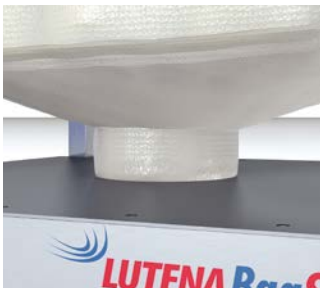
Besides the standard model, all conceivable modifications are possible. These include modifications relating to the size, loading capacity, safety and hygiene regulations as well as any process conditions. In each case, you receive a turnkey system that is ready for immediate use. Dusty processing rooms and other sources of contamination are a thing of the past.



Height-adjustable support rods

Integratable connection for conveyor adapter

Option of forklift shoes for transport with a forklift

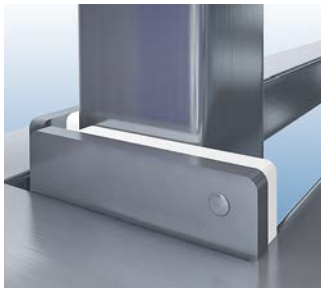


Solid product retaining plate with adapted opening for independent, dust-free connection of the Big-Bag outlet.

Big-Bag station for weighing

In addition to our proven "BagStar" Big-Bag Stations, we also offer you the option of weighing the Big-Bag directly. This allows products to be removed or filled with an accuracy of +/- 1 kg - for precise and efficient processes. Of course, we also adapt the "Big-Bag stations for weighing" individually to the size of your Big-Bags.

The vacuum conveyors and "BagStars" are controlled and monitored centrally by our proven control units from the CCLUR series, available from a screen size starting at 15 inches.



POM-plates for very low frictional resistance for more precise weighing

For more information about our CCLUR control units, please see page 33

Special solutions in vacuum conveying

Special measures are necessary when conveying and processing some materials, be they to prevent harm to the environment and people or to minimise production downtime and raw material losses. In many cases, the existing process technology or spatial conditions call for special solutions. In all such cases, LUTENA-VAKUUM designs modules and add-ons for your vacuum conveying system to meet your specific demands.

PECIAL SOLUTIONS

Popular special solutions:

- Conveyor with police filter stage
- Conveyor with pinch valve as vacuum relief
- Dust removal with a suck and blow system
- Minimal maintenance
- Vacuum generation with electric pumps

Examples of possible special solutions

Vacuum conveyor with police filter stage

Our police filter stage is used in areas in which neuralgic substances are processed or where a regular filter check cannot be ensured in a vacuum conveyor. A police filter stage contains a double-decker filter chamber. If the first filter stage is penetrated, the second filter stage starts operation.

This system can also be designed with a differential pressure measurement with an interface to a central control centre.

LUTENA VACDUSTer (dust removal system)

We also provide small dust removal systems based on our special modular design.
For example, these are used for dust extraction on tablet presses or in similar areas.

The Lutena VACDUSTer can be connected to existing dust extraction systems. Manual or automatic filter back-flushing is also available. The LUTENA VACDUSTer can naturally also be fitted with a police filter level. It is available with either a collection tank or with a discharge valve.

The discharge valve is based on our free-flow valve technology.

Suck and blow system

Our pneumatic suck and blow system is used if the LUTENA VACDUSTer operates in an EX area, or no central extraction is available or desired.

An annular gap ejector sucks in the dust-laden air and then blows it into the LUTENA VACDUSTer.
The suck and blow system is extraordinarily powerful given its small size. It can easily be mounted to a transport line consisting of pipes or hoses. The suck and blow system is exclusively operated with compressed air, just like our vacuum pumps.

Vacuum relief system when using electric vacuum pumps

When using electric vacuum pumps, the vacuum supply to the conveyor needs to be shut-down and the conveyor needs to be ventilated.

This is where our pneumatic vacuum relief system is used.

A pinch valve supplies large volumes of external air to end the suction cycle.

Dust and particle filters to the highest standards

Our many years of experience in the field of vacuum conveying technology have led to the development of special filters for the various models of vacuum conveyors.
Examples include stainless steel filters made of woven material, which are ideal for pharmaceutical, food and chemical applications. PTFE-coated filters with a grade of filtration of 0.5µm are also available. These are used for very fine products such as toner powder. A wide range of materials and filters can be supplied.

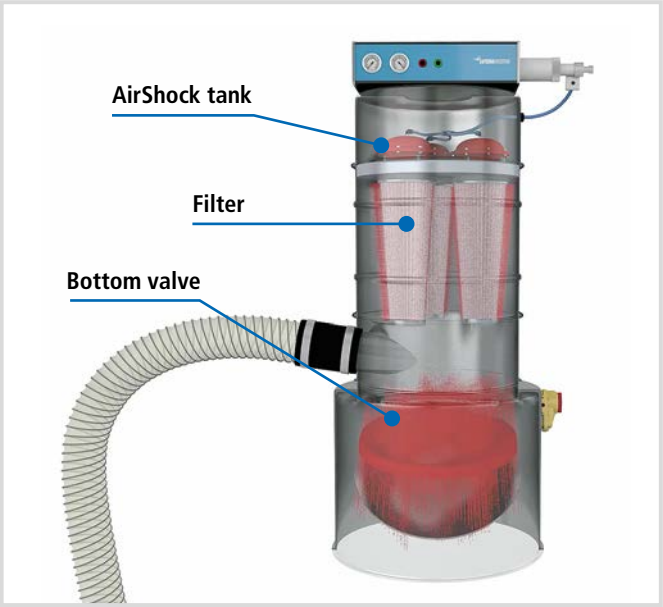
DUST AND PARTICLE FILTERS

Specifications:

- **External material made from stainless steel or coated polyester**
- **Various types of folds**
- **In some cases, with fold open to the bottom**
- **Individual configurations possible**

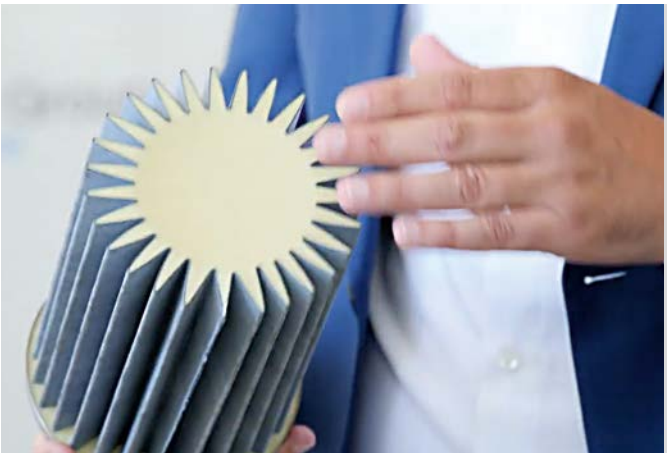
Innovations and new ideas in filter technology for safe and clean exhaust air

Lutena vacuum conveyors are used to transport a wide variety of products. Underneath, light and heavy, food and also harmful products. It is therefore important to make sure that the exhaust air leaving the filter in the environment is clean.



During the operation of the vacuum conveyor system, the fine particles of the transport medium adhere to the filters. As soon as the bottom flap opens and the transport medium is drained, the filters are cleaned back from the AirSchock tanks using accumulated compressed air.

The simple handling when replacing the filters enables a quick adaptation to changed product-specific requirements and facilitates maintenance and cleaning of the conveyor system.



Filtration Group and Lutena Vacuum

Filtration Group GmbH (formerly MAHLE Industriefiltration) and Lutena Vakuum GmbH have been working together for more than 15 years to develop innovative products and make vacuum conveying technology safer, healthier and more productive together.

Filtration Group®
Industrial

Product feed for vacuum conveying

The shape of the product feed or intake point is an important factor to optimise the performance of a vacuum conveyor system. Almost all bulk materials require an appropriate false air volume to ensure safe transport. Or alternatively, the material needs to be transported at an appropriate speed or in an appropriate transport phase.

MODULES AND EXTENSIONS

We provide different systems in order to achieve this:

- **Feed adapters**
- **Conveyor pipes**
- **Conveyor guns**

Bulk material technology made easy…

Feed adapters

Feed adapters are used in a range of sectors where products are fed automatically. It is used under silos or even in various feed stations.

A conveyor adapter has 2 points for adding false air:

1. Via the "horizontal injector"
2. Via the secondary supply air

Horizontal injectors

The horizontal injector allows the optimal adjustment of the location and volume of the false air supply to the product. This prepared product/air mixture can then be accelerated using the secondary supply air.

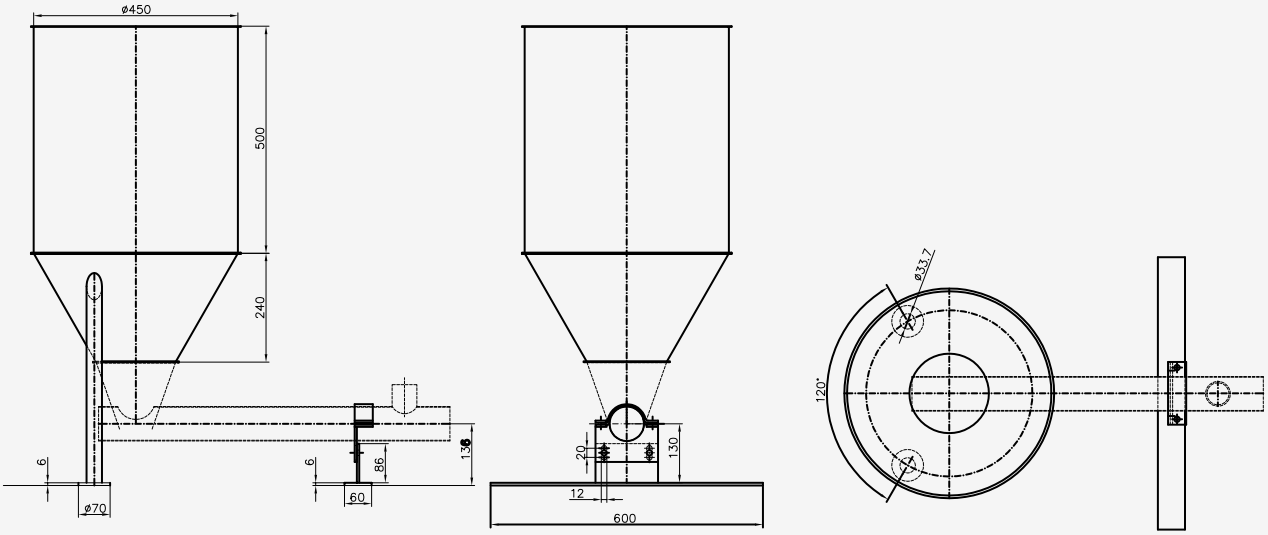
Feed nozzle

If a manual product feed is required, we recommend our double-walled feed nozzle. The desired false air volume can be set by adjusting the position of the inner pipe to the outer pipe. Both pipes are bevelled to facilitate immersion in the product.

It can also be manufactured with a suction basket on request. Our single-walled conveyor guns are used for the simplest applications.

Example configurations of different feed stations and their possibilities

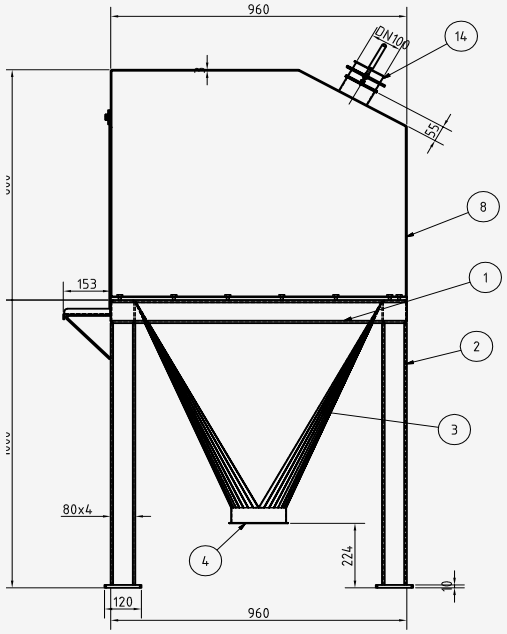
Feeding station 76

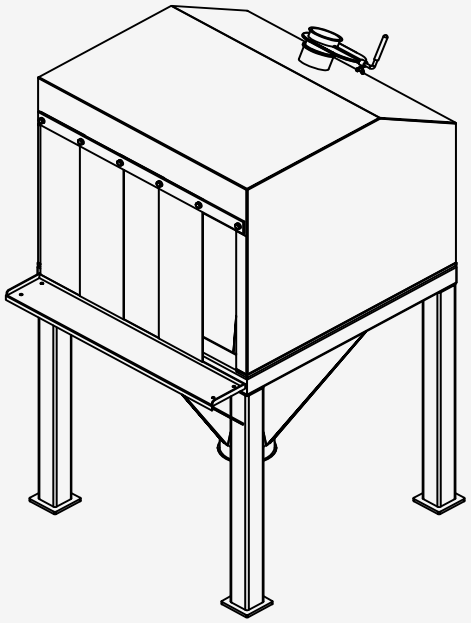


	Examples				
Suitable for diameter:	**32**	**50**	**75**	**100**	
DN:	**125**	**175**			

Stainless steel:	**Execution:**	**Surfaces:**
(AISI) 304	standard	standard, glass beaded
(AISI) 316 /-L	optional	optional, glass beaded or polished
(AISI) 31Ti	optional	optional, glass beaded or polished

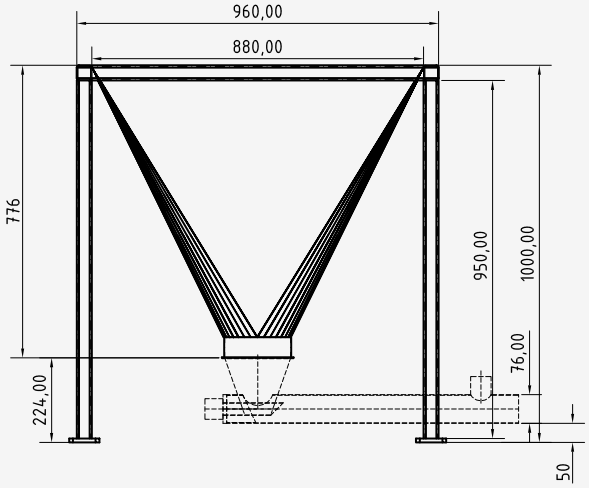
Feeding station, closed with dust exhaust hood

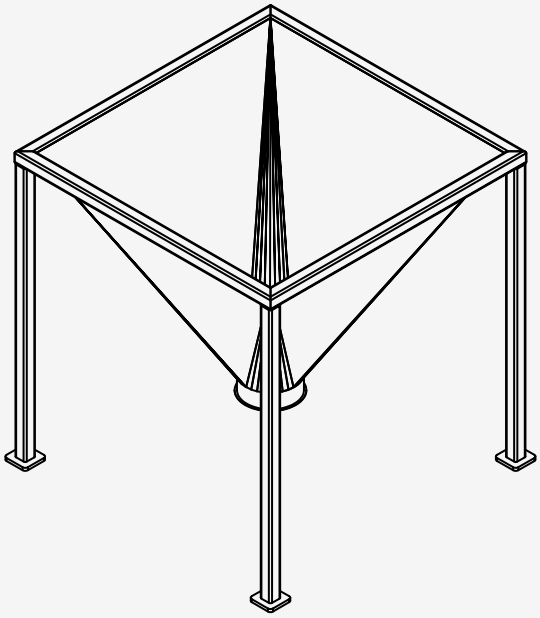




Examples

Feeding station 200 liter

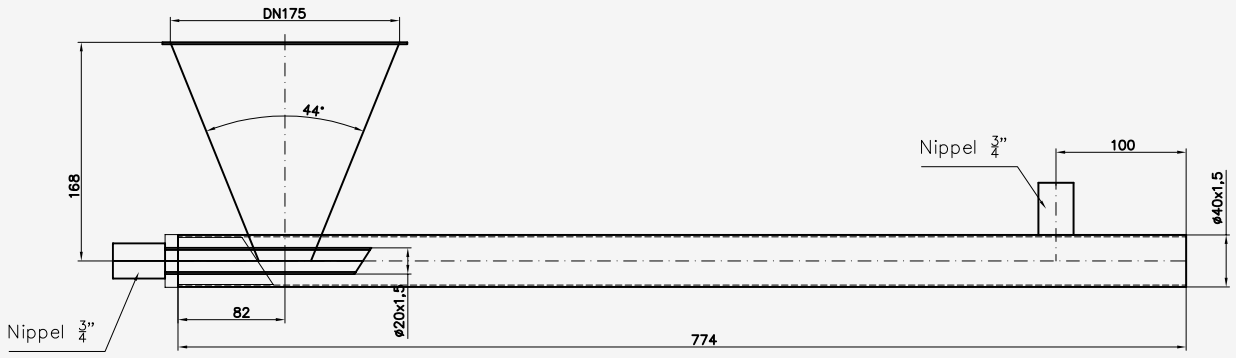




Examples

Examples for feeding adapter and feed nozzle

Feeding adapter

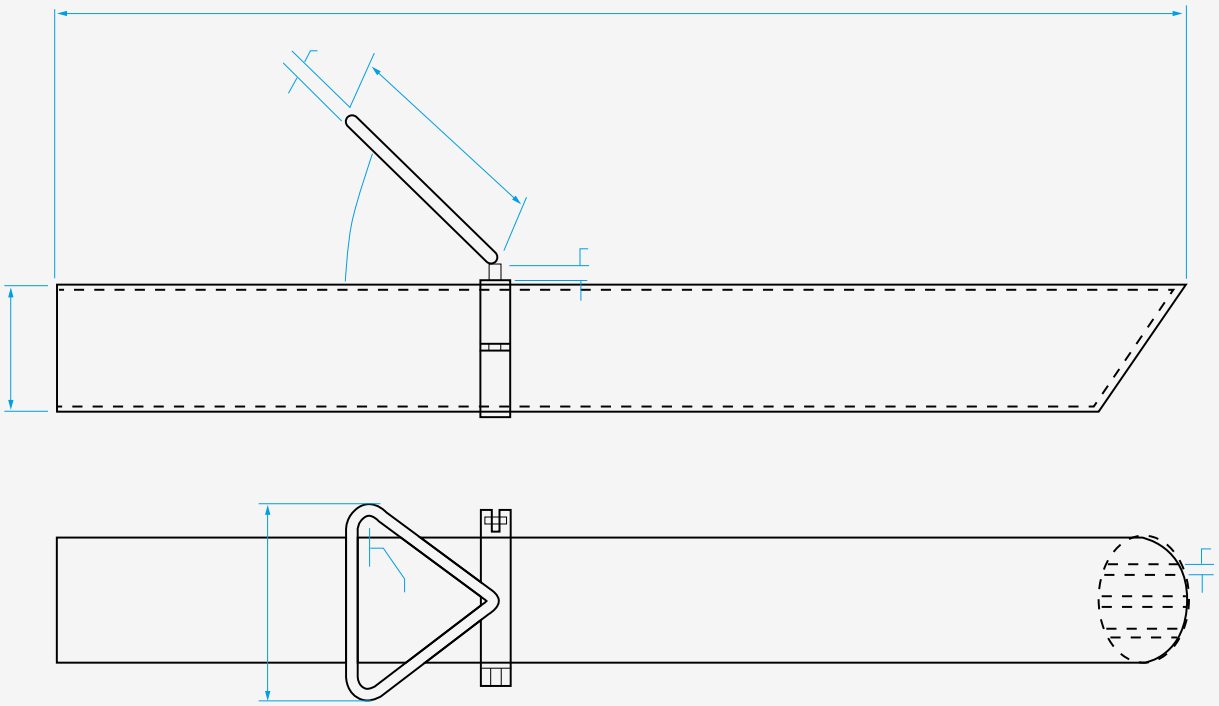


Examples

Connecting via:	32	50	75	100	
DN:	125	175			

Stainless steel:	Execution:	Surfaces:
(AISI) 304	standard	standard, glass beaded
(AISI) 316 /-L	optional	optional, glass beaded or polished
(AISI) 31Ti	optional	optional, glass beaded or polished

feed nozzle

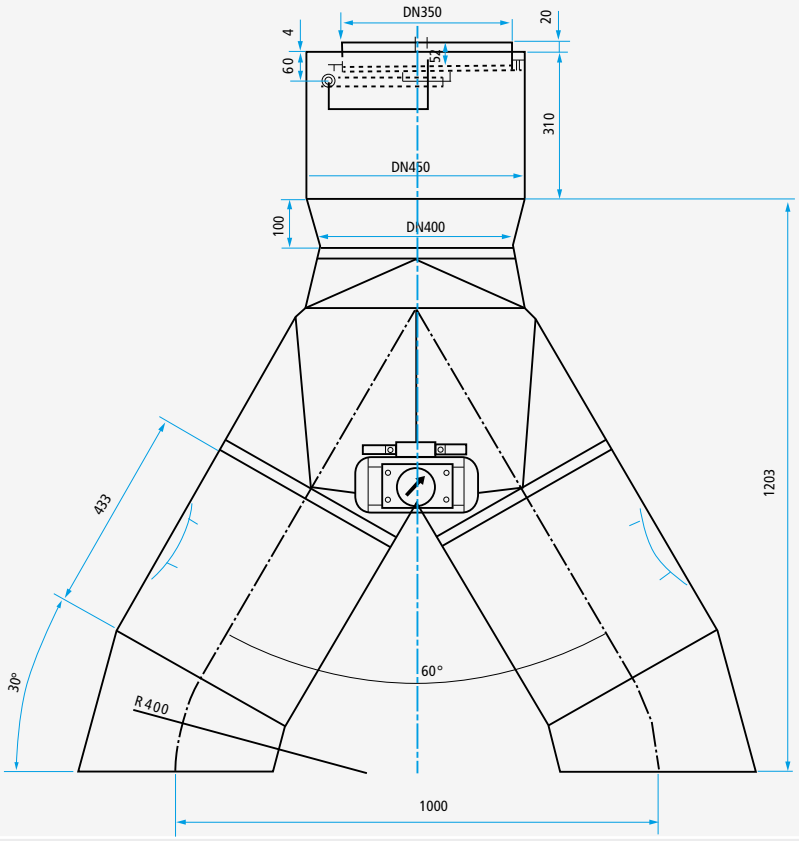


Single or double wall version

Suitable pipe diameter:	**32**	**50**	**75**		**other sizes on request**
Surface:	**Glass beaded or polished**				

Stainless steel:	**Execution:**	**Surfaces:**
(AISI) 304	standard	standard, glass beaded
(AISI) 316 /-L	optional	optional, glass beaded or polished
(AISI) 31Ti	optional	optional, glass beaded or polished

Distributor



Examples

We produce as desired.

The new LECC control units - compact, intuitive and reliable

Our LECC series control units are the most simple and efficient control system for our vacuum conveyors. The compact units are fully enclosed in a stainless steel housing (1.4301/1.4304). All connections are made directly via pneumatic plug-in connections, while cables for level signals and remote on/off are securely held in stainless steel screw connections. The time can be set to the second intuitively by pressing just a few buttons. The set times and feedback on sensors and battery status are clearly shown on the easy-to-read 7-segment display. The control units can be operated either in battery mode (approx. 1 year running time) or with an external 24 V DC power supply.

In the LECCS version, the control unit can be supplied directly with mains power. It also provides the option of feeding power directly to a sensor.

The LECCR version also provides the option of controlling a pipe emptying system, which means that even large height differences can be reliably overcome and difficult products can be conveyed.

The LECCG version is ideal for use with rising damp, e.g. directly on your boiler. It keeps the free-flow flap closed in the rest position to prevent moisture getting into the vacuum conveyor.

The LECCR and LECCG versions are also available in the S version.

Variant S: external power supply via integrated power supply 230V AC to 24V DC incl. overvoltage protection. Supply voltage for external sensor 24V DC 60mA. Integrated relay for switching the sensor output.

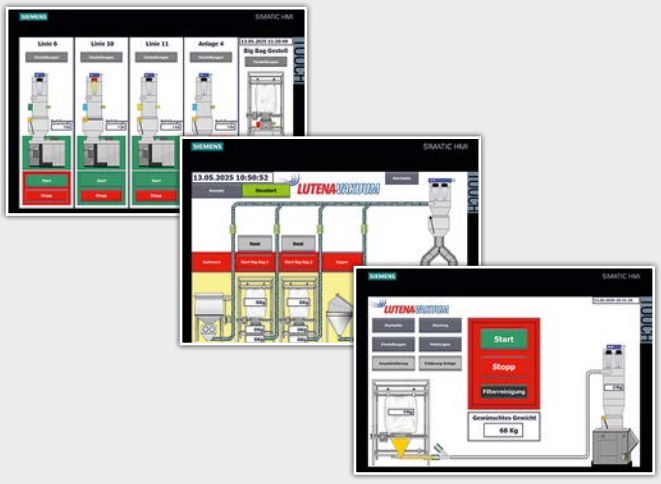
CCLUR control unit (programmable logic controller PLC) – Convenient, versatile and centralized

If the possibilities of our LECC series are not sufficient for your conveying task, we offer you the solution for more complex systems with the controllers of the CCLUR series - convenient and reliable.

In addition to the control of several vacuum conveyors, recipe management when products change and the control of different conveyor sections using diverters, there are a wide range of possible applications for the control of additional components such as rotary valves, vibrating chutes or conveyor belts.

In combination with our BagStar, the control units of the CCLUR series also enable big bags to be filled or emptied with an accuracy of +/- 1 kilo directly with the vacuum conveyor.

For the control units of the CCLUR series, proven components from Siemens find their place in a stainless steel control cabinet. All settings and information for your conveying processes are controlled centrally via a touchscreen - for simple and intuitive operation, even for more complicated conveying tasks.



Lutena-Vakuum accessories

We deliver a wide range of accessories and spare parts. Just ask us…

PNEUMATIC SUPPLIES

Item numbers of replacement parts for Lutena vacuum conveyors

Possible types:	LEC150-1	LEC150-2	LEC200-2	LEC200-4	LEC350-8	LEC350-12	LEC450-12
Module gasket EPDM	1700557	1700557	2000557	2000557	3500557	3500557	4500557 3500557*
Module gasket NBR	1700560	1700560	2000560	2000560	3500560	3500560	4500560 3500560*
Number of gasket	3	4	4	4	3	3	3 +*1
Filter type …-06						4	4 +*1
Bottom valve gasket NBR	71150	71150	71200	71200	74350	74350	74350
Coupling	080047	080047	080047	080047	080047	080047	080047
Pump gasked	3201069	3101091	3101091	3101091	3101092	3101099	3101099

Module gaskets and clamping rings

Gaskets made from differentmaterials

Service page with online forms to order spare and replacement parts.

Pneumatics, hydraulics, industrial equipment and more…

Whether pneumatic or hydraulic systems, industrial equipment or tools and consumables, we supply virtually everything required for using vacuum and compressed air technology in industry. You can conveniently select products from our catalogue or place your order online.

For online orders, you can register directly in our shop:

shop.lutena-vakuum.de

Online-Shop

Order items from this catalogue online:

shop.lutena-vakuum.de

Advice

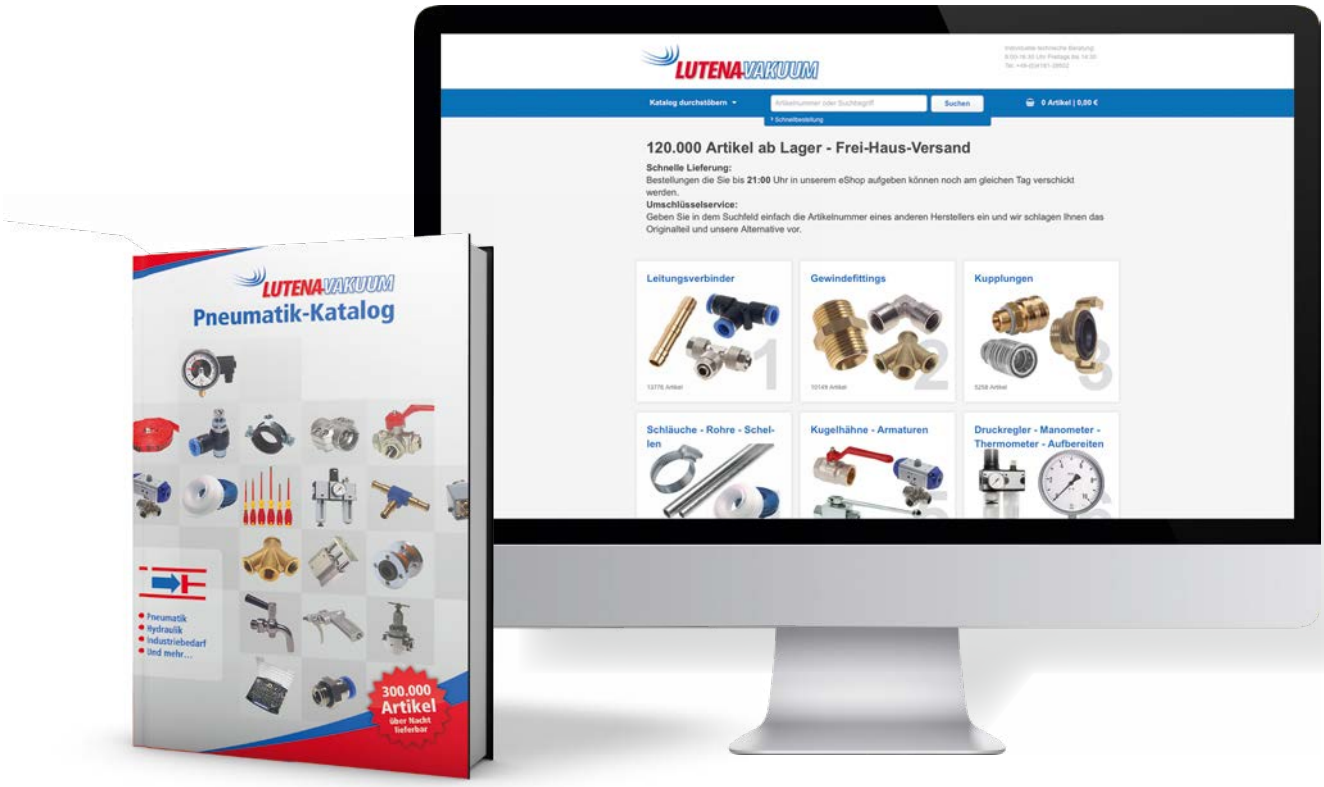
Telephone support and orders:

+49 [0]4181 / 39502

Product groups from our pneumatic supplies catalogue:

- Pipe connectors
- Threaded fittings
- Coupling technology
- Hoses / pipes / clamps
- Shut-off fittings
- Control / measurement / processing
- Valves / cylinders / vacuum
- Industrial equipment
- Tools
- The foreman's office

Direct to the online shop for pneumatic items



mail@lutena-vakuum.de

Email enquiry to arrange a meeting

Please fill in this reply form. Make a copy and send it to us by Email or by post.
We will then contact you and advise you on how your system can operate.
This offer is free of charge and does not commit you in any way.

Your request:

☐ Vacuum conveying technology
☐ Pneumatic/hydraulic requirements
☐ Filter development
☐ General use

Contact details

Company: _____ Phone: _____

Contact person: _____ Fax: _____

Address: _____ E-Mail: _____

Town or City/Post code:: _____

Country: _____

Details of the material

Material: _____

Bulk density: from: _____ to: _____ kg/dm³ Particle size: _____ µm

Angle of repose: _____ °

Abrasive material: ☐ yes ☐ no

Flow characteristics: ☐ free-flowing ☐ bridging ☐ adherent
☐ weitere Eigenschaften: _____

The material is: ☐ static ☐ explosive ☐ inflammable ☐ toxic

Chem. reactivity: ☐ no ☐ yes, reacts with: _____
(e.g. with aluminium, stainless steel, brass, nitrile rubber, silicone, polyethylene, PU, PV, etc.)..

Installation

Capacity: _____ tonnen/h

Transport distance: Overall: _____ m / horizontal:_____ m / vertical: _____ m

Number of pipe bends: _____

Type of pipeline: ☐ hose ☐ metal tube ☐ combination / Pipe diameter: _____ ∅/cm

Temperatures: material:_____ °C / surrounding: _____ °C / at feed station: _____ °C

Moisture content: material:_____ % / surrounding air:_____ %

Type of product input: _____
((e.g. SUCTION FROM: feed hoppers, barrels, sacks, silos, big bags, installed plant: dryers, mixers, etc.)

Type of product output: _____
(e.g. FILLING OF: stirrer tanks, mixers, filling plants, sieves, pelletizing machines, weighing vessels, storage containers, etc.)

The Lutena Vakuum GmbH

Dipl.-Ing. Kay Haegermann

Reliability has been creating trust – for more than 20 years

As a modern company based in the business location of Hamburg, we have been serving companies throughout Germany for a number of years. The reliable support that we offer our clients and the development of our own patented engineering solutions have enabled us to establish a name for ourselves.

As specialists in industrial vacuum conveying, we are regarded as the first port of call for production optimization and also for assistance in the development of completely new plants. New innovations and the extension of our product range will ensure that we will remain an expert partner for our clients in the future as well.

Credentials

Whether food, pharmaceuticals or chemicals – many of our products are successfully operated by renowned companies.

Vitakraft energía | BASF The Chemical Company | Harry Bäcker seit 1688
kraft foods | ATLANTIC MULTIPOWER | DESITIN SUCCESS IN CNS
Mars | Pelikan | Honeywell

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Easy Conveying

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