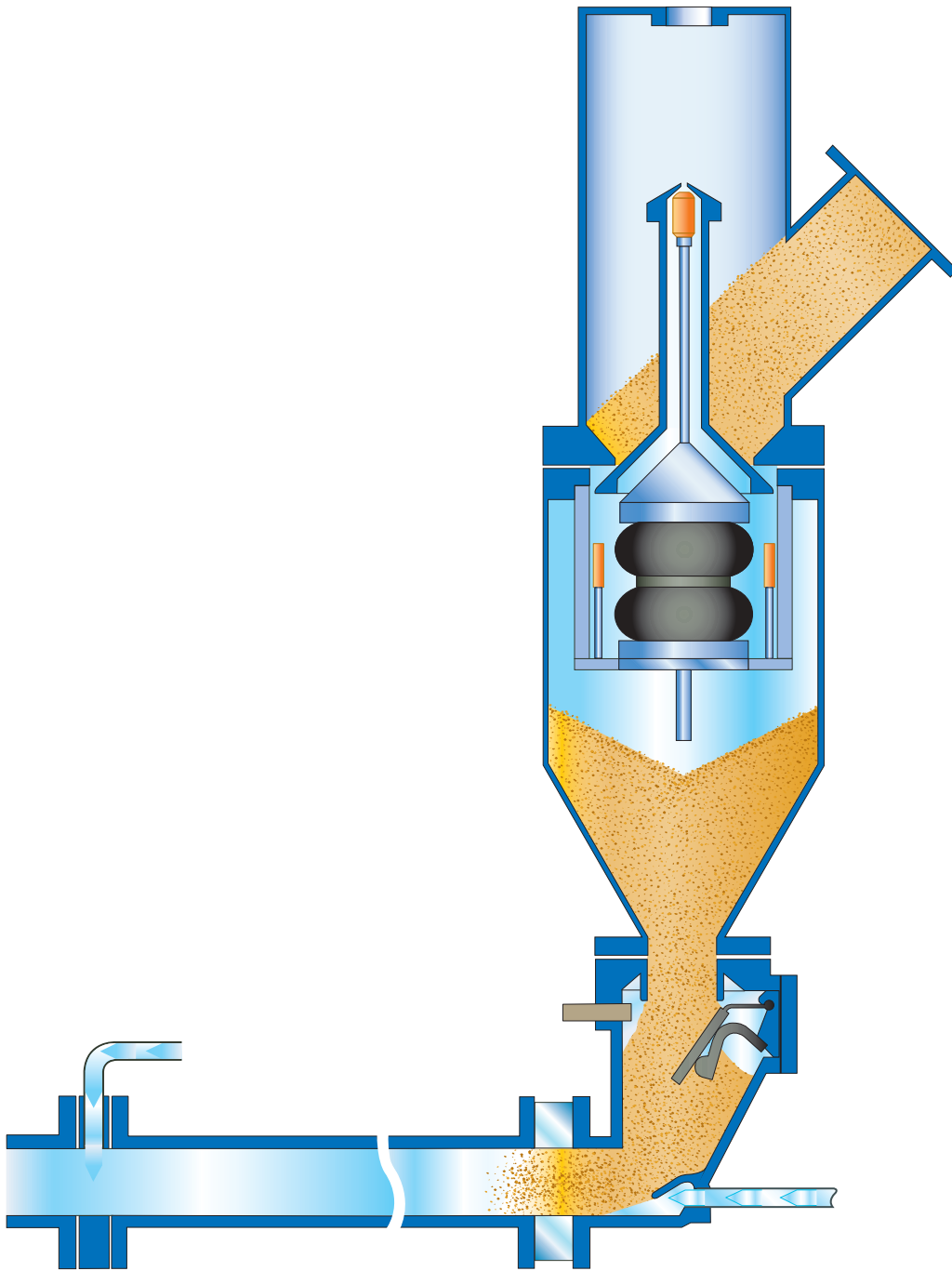


Pressure Vessel Conveyor SP-HL



Our range of products:

Pneumatic Conveying Technology

Pneumatic conveying plants with pressure vessel conveyors for dry, pourable, abrasive and abrasion-sensitive materials.

- Plug-flow pneumatic transporter for the conveying of granular material such as silica sand
- 'S-Type' conveying of dust resembling materials such as bentonite, coal dust and additives
- 'PLI-process' for the low-wear transport of abrasive materials in a wide range of grain sizes



Core sand mixing technology

Mixing and distribution systems with

- Core sand mixer STATORMIX or
- Vibrating batch mixer SM



Reclamation technology

- Used sand reclamation plants
- Regeneration unit ROTAREG to improve the quality of the used sand

- Engineering, installations and after-sales-service



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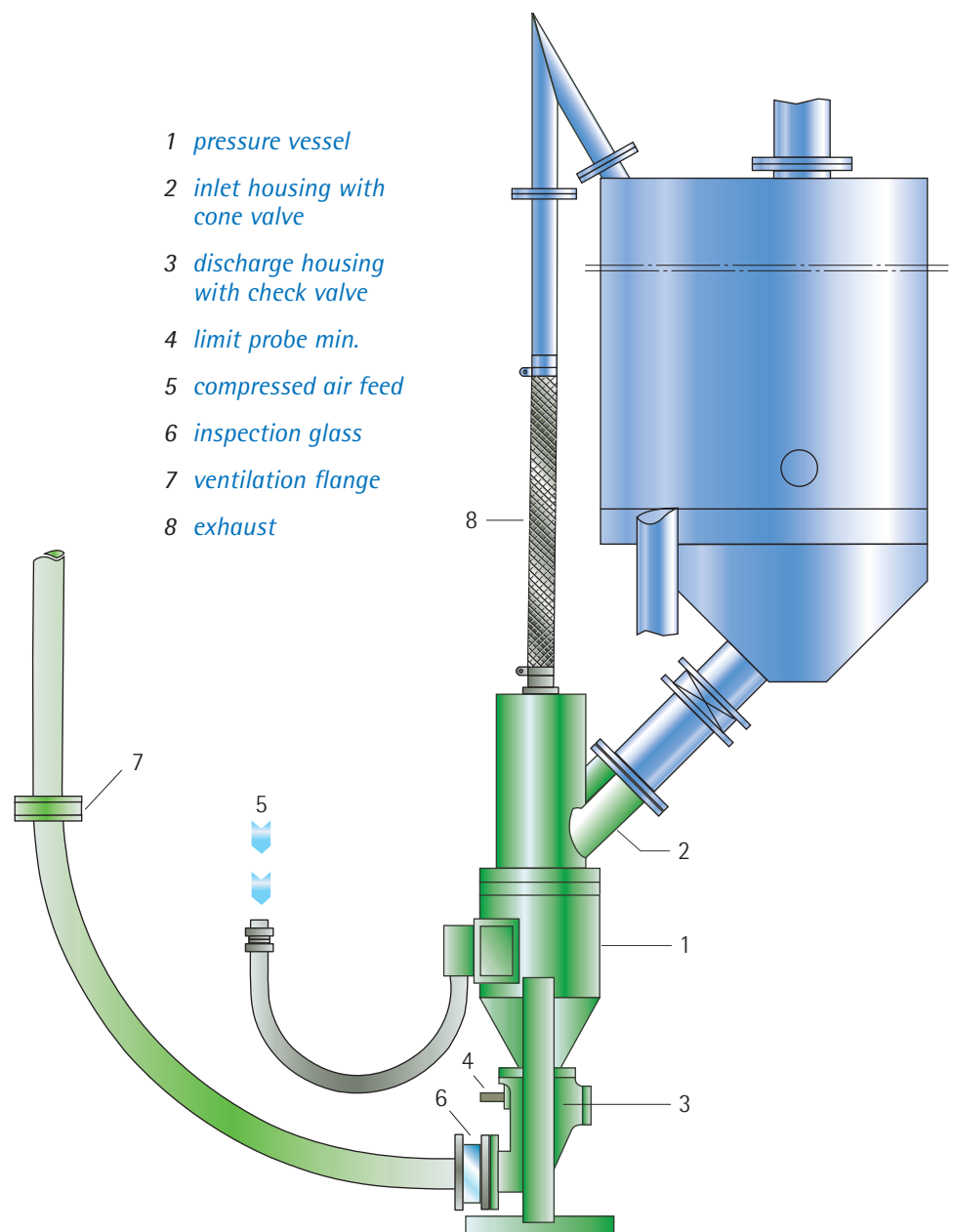
Pressure Vessel Conveyor SP-HL

The KLEIN pressure vessel conveyor SP-HL was conceived for the continuous conveying of dry, granular and pourable bulk materials such as silica sand and similar products.

The pressure vessel conveyor SP-HL continually feeds the material in portions from the unpressurized inlet vessel into the pressurized conveying line. A smooth and continuous conveying process is ensured by extremely short filling cycles and constant air injection into the conveying line.

The advantages of the SP-HL in contrast to conventional conveyors, in which the conveying process is interrupted in order to decrease the conveying pressure and refill the pressure vessel, are:

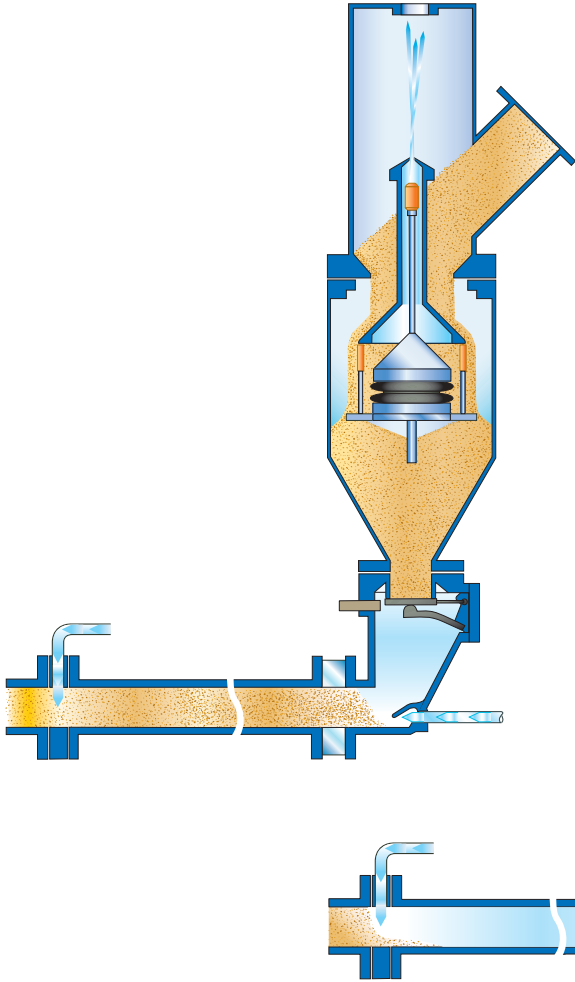
- higher conveying capacities
- considerable energy saving
- lower wear at conveying pipes and conveying material
- very compact design
- no preventive inspections by corresponding authorities required
- less waste air and less strain on the filter
- integrated electro-pneumatic timing control clocked by one inductive switch. Display of maintenance intervals. One fault message available
- for very high conveying capacities two SP-HL conveyors are combined to a tandem conveyor feeding one conveying line
- low maintenance expenditure. Excellent accessibility of wearing parts
- air-flushed cone valve



The operating mode of KLEIN pressure vessel conveyors SP-HL: continuous, simple, smooth

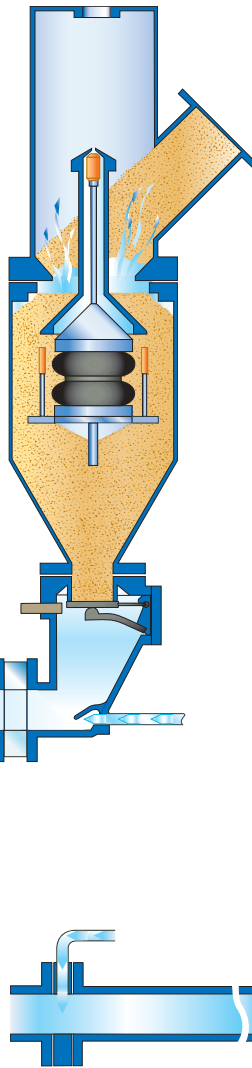
1. Filling stage

The inlet valve is open and the material enters the pressure vessel. The filling process is time-controlled. The flap of the discharge valve is pressed against the sealing edge of the discharge opening by the closing spring and the air pressure prevailing in the conveying line.



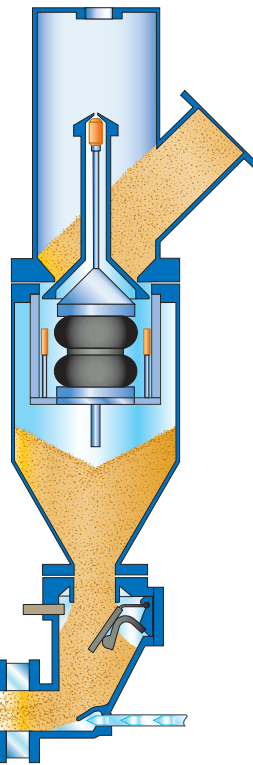
2. Closing stage

A bellows cylinder forces the inlet cone towards the cone seal, the valve area being simultaneously flushed with air from the nozzle ring. This ensures air-tight closing of the inlet with a minimum of wear.



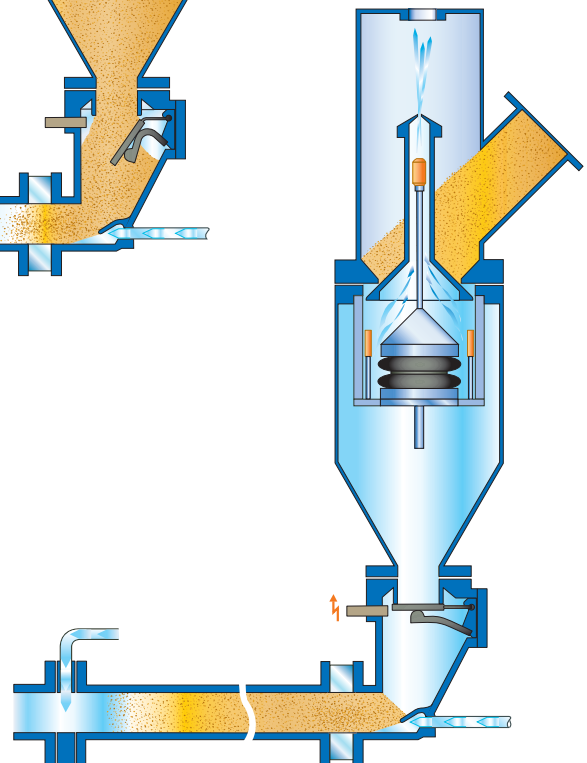
3. Conveying stage

After the inlet valve has closed, air continues to flow from the nozzle ring and builds up the required conveying pressure in the pressure vessel. As soon as the pressure prevailing in the conveying line is exceeded, the discharge valve opens and the material is supplied into the conveying line.

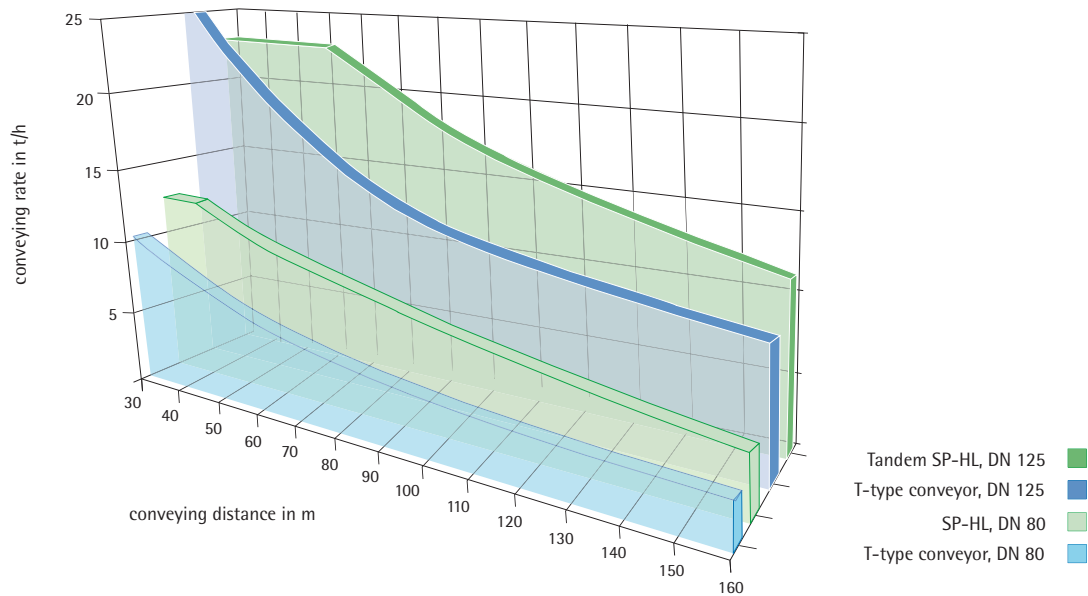


4. Switching / Exhaust stage

After the pressure vessel has been emptied, a leaf spring presses the flap of the discharge valve against its seat so that the inductive min. probe is activated. The air feed into the pressure vessel is interrupted and the bellows cylinder of the inlet valve is exhausted. The ventilation valve opens and the pressure in the pressure vessel drops until the inlet cone is lowered by its own weight thus clearing the passage for the next filling cycle.

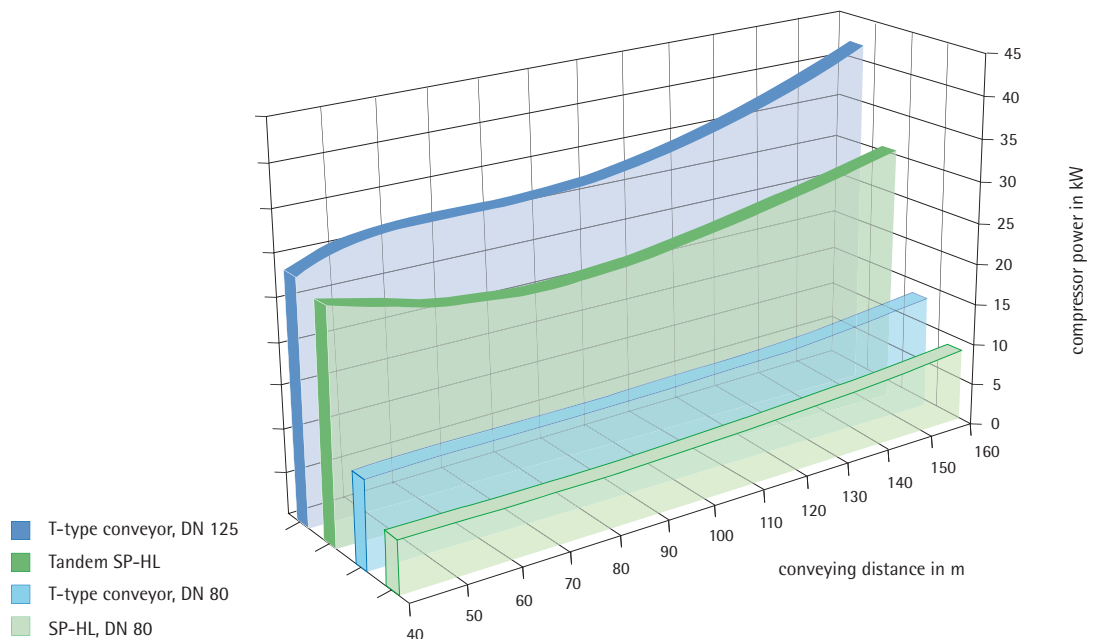


Achievable conveying rates of conventional sand conveyors compared to the SP-HL



The above-mentioned figures are related to silica sand F32 and similar grain sizes. In this example, the conveying velocity for both conveyor types is the same and remains below the level where vibrations in the conveying line and more wear occur. The SP-HL does usually not require any additional air supplies over the length of the conveying line.

Energy saving features of the SP-HL compared to conventional conveyors



The above-mentioned figures are related to the achievable conveying rate of a conventional conveyor over a certain conveying distance and the electric energy consumed by the compressor to achieve this conveying rate. The comparison illustrates the saving potential of the SP-HL.