Handling Equipment
& Dedusting
Chain Conveyors

Purpose

A chain conveyor is designed for the handling and extracting of granular and powdery products over a sloped, horizontal or linear trajectory.

Capacity

Our new range of chain conveyors covers capacities up to 530 m$^3$/h i.e. 400 t/h on cereal base SW 0,75.
The complete range allows capacities up to 1600 m$^3$/h.

For applications not included in this range, our Design Offices are qualified to develop specific conveyors meeting any requirements.

Improved design

- Sprocket with dismountable teeth.
- Block screw pulleys
- Rationalized chains:
  - chains including Stolz forged links, with breaking strengths from 22 to 100 T
  - ISO standardized mechanical chains, with breaking strengths from 11 to 31 T
- Return rails in HMW, and HMW plates every 2 pitches reducing the wear and sound level
- Limited references for spare parts

Improved discharge

Different possible axis height of pinions and foot pulleys according to the chain type optimizing the conveyor discharge.
Without this system, some chains lift up over a few meters before discharge head preventing a complete discharge of the unit.
The chain trajectory is then adjusted as close as possible to the bottom.
As an option, a rounded casing follows the chain trajectory at foot reducing the product retention.

Safety devices

- ATEX compliance 94/9/CE on demand
- Rotation control
- Clogging detection
- Product flow detection
Design for limited product retention

- Rounded head top profiles
- Optional rounded moving tensioning casing at foot
- Adjustment of trajectories according to chain types
- Complete high Density Polyethylene chains with plates and side polyurethane scrapers
- Bottom replacement valves
- Vertical spacers
- Shaped return rails

STOLZ chains with breaking strength 22 to 100 tonnes
ISO chains with breaking strength 11 to 31 tonnes
No retention valve
No retention smooth inner inspection door
Sprocket with dismountable toothing
Tensioning system with optional rounded moving casing
Inside moving casing at foot
Bucket Elevators

Purpose

A bucket elevator is designed for the handling and extracting of granular and powdery products over a vertical linear trajectory.

Our wide range of standard elevators allows capacities up to 1600 m$^3$/h.

For applications not included in this range, our Design Offices are qualified to develop specific elevators meeting any requirements.

Features

- Protection of the head ejection area against abrasion
- Adjustable and flexible outlet skirt
- Dismountable sheath
- Any type of buckets and belts or chain
- Possible slow speed for fragile products

Options

- Optimized discharging foot
- Suction intake or built-in dedusting filters
- Gradual progress for maintenance
- Feet above ground for easy maintenance

Accessories

- Refeeding inlet

Safety devices

- ATEX compliance 94/9/CE on demand
- Belt misalignment control
- Rotation control
- Clogging detection
- Product flow detection
Solutions for limited explosion risks

STOLZ solutions to limit explosion risks:

- Use of antistatic (ISO284) and self-extinguishing (ISO340) belts
- Fitting of explosion vents (to be specified according to each elevator: installation, capacity, KST product...)
- Dedusting at feeding inlets and outlets
- Misalignment belt control
- Rotation control
- Bearing temperature control (option)
- Inert gas injection
Screw Conveyors

Purpose

The screw conveyor is designed using the screw conveyor principle for the handling and extracting or dosing of the granular and powdery products. The product is handled horizontally or sloped in a linear way.

Our wide range of standard screw conveyors allows capacities up to 300 m$^3$/H.

For applications not included in this range, our Design Offices are qualified to develop specific screws meeting any requirements.

Types

2 types of screw conveyors:
- trough
- tubular

Conical extracting screws

Spires

The spire usually includes a tube on which a continuous thread is welded. They can be with pallets or ribbon.

The pitch can be:
- regular for product conveyance
- progressive for product extraction

Features

- Continuous pitch, with pallets or ribbon
- Regular, progressive or conical pitch
- Synthetic intermediate bearings
- V ring joints or felt sealing

Options

- Bronze or cast bearings, with or without wearing shell
- Sealing by gland with braids
- Spire height adjustment
Accessories

- Fast closing flap for dosing
- Valve with residues limitation
- Bottom doors

Safety devices

- ATEX compliance 94/9/CE on demand
- Rotation control
- Clogging detection
- Product flow detection
Belt Conveyors

Purpose
The belt conveyor is designed for the handling and extracting of the granular and powdery products. The product is handled in a linear way over long distances, horizontally or sloped.

Granular or powdery product handling, fragile products within a range with capacities up to 1600 m$^3$/h.

For applications not included in this range, our Design Offices are qualified to develop specific conveyors meeting any requirements.

Features
- Pulley and belt scrapers
- Magnetic protection
- Automatic or screw tension with counterweight
- Antistatic (ISO284) and self-extinguishing belts (ISO340)
- All types of rollers
- Discharge hopper with 1 or 2 outlets

Options
- Dedusting filter at feeding inlet or discharge outlet
- Tripper with built-in dedusting filters
- Specific scrapers

Safety devices
- ATEX compliance 94/9/CE on demand
- Belt misalignment control
- Rotation control
- Clogging detection
- Product flow detection
- Emergency stop with cable

Storage bins feeding

Sealed belt conveyor with fines recovery

Discharge hopper
Stacker belt conveyor

Food belt

Sugar handling

Port handling

Belt misalignment control

Feeder hopper

Head scraper

Tripper
Chain Reclaimer

Purpose
The chain reclaimer is a machine dedicated to the handling or extracting of bulk granular products in flat storage. At refilling stage it can be used to optimize the storage capacities through bottom flat equalizing. At discharging stage it is designed for removing residual heaps.

Features
- Assisted automated operation
- Open beam designed to prevent product retention

Safety devices
- ATEX Area 22 on demand
- Autonomous safety devices monitoring
- Chain reclaimer can be placed in a safety position to give access to storage area

Principle

Storage
A first part of the flat storage is filled up gravitarily

Filling up
The product heap is scraped by the chain reclaimer to the bottom during storage to optimize the content capacity.

Unloading
The product is pushed by the chain reclaimer to the chain conveyor by moving from one side to the other one.
Control
Automatism on the machine allows a complete control of:
• Electric monitoring
• Automatic cycles control
• Machine and human safety devices control
• Preventive maintenance
• Remote maintenance

Equipment
• Remote control to control product approach and to start up assisted automated cycles
• Display panel allowing interaction with the machine
• Profibus network allowing communication between cabinet and beam
• AS-i network on beam collecting all information from sensors
• Modem for remote maintenance

Automation

Silo unloading
Product pushed to the chain conveyor
On site operators training
Workshop testing
Remote control
Network wiring of sensors
Hoist embarked on beam
Positioning sensor
STOLZ cabinet
Chain reclaimer in sugar silo

STOLZ cabinet

Workshop testing

Silo unloading

Product pushed to the chain conveyor

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Hoist embarked on beam

Positioning sensor

STOLZ cabinet

Chain reclaimer in sugar silo

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Gravity handling

**Purpose**
Gravity handling of granular or powdery products.

**Features**
- Round or square shapes
- Manually, pneumatically, or electrically operated diverters (swing distributors, revolver distributors, two-way boxes, valves)
- Depending on use: special steels, elastomers, ceramics

**Accessories**
- Fall boxes
- Non cross contamination retarder

**Trucks loading**
- Swing distributor with non contamination flap
- Revolver diverter
- Ships loading distributor
- Canal-boat loading
Pneumatic conveying

Purpose
Handling of granular or powdery products by pulsed air or air vacuum.

Features
• Speed in accordance with product embrittlement
• Different types of rotary valves and sealing chambers
• Round, square, or rectangular sections
• Specific air release piping

Options
• Anti-wearing protection in ceramic
• Removable cast iron, Ni-Hard bends
• Pressured seal for tightness at shaft crossing tightness
• Regulation on programmable automaton
• Air treatment by heater and dryer

Safety devices
• Pressure switch, temperature sensors, regulation
• Counter current inerting
• Clogging sensors
• Equipotential link

A pneumatic conveying feeding by a cyclone
Pad Filters

Features
- Limited size for filtering area up to 120 m²
- Cleaning by counter current compressed air (tanks do not require to be proofed again)
- Filtering pads adapted to the different kinds of products

Uses
- Silo decompression
- Pneumatic handling
- Cooling
- Grinding
- Bulk pit cleaning
- Cleaning of dust emission points on handling equipment (inlets, outlets,...)
- Bags unloading

Regulation
- Atex 94/9/CE compliance on demand
- Compliance to the regulations in force and to specific requests in regard of dust discharge
- Air tank compliance to the 97/23/CE pressure equipment directive, do not require to be proofed again

Solutions for limited explosion risks
- Use of antistatic medias
- Installation of explosion vents (to be specified according to: implantation, capacity, product KST,...)
- Installation of a decoupling valve
- Reinforcement of the filter
- Clogging monitoring of the media by measuring the Delta-P
- Control of the medias state
- Wastes control
- Inert gas injection

Built-in pad filter

Bag emptying pad filter

Centralised dedusting
Our sequencer is designed to control and monitor the pads and sleeves filters cleaning. The solenoid valves are inserted into the sequencer. This device is set according to the required use. The sequencers are fitted with a ΔP module, controlling the start-up and stop of the cleaning operation. This device saves air and improves filtration.

It is equipped with:

- High and low ΔP alarms (with relay output)
- A ΔP threshold and an input for fast running
- A control of an electric fault
- An analog output for the remote monitoring of ΔP measurement
- 2 relay outputs to report faults and control the cleaning.
Sleeve Filters

Features
- High capacity of filtration: up to 210 m² as standard
- Cleaning by counter current compressed air (tank do not require to be proofed again)
- Filtering sleeves adapted to the different kinds of products
- Shapes designed to limit retention of product
- Control of the filtering process of product similar to pads filters (see page 15)

Uses
- Centralised cleaning
- Grinding
- Bulk pit cleaning
- Bulk loading cleaning
- Cleaner - Drumscalper

Cyclofilter principle
The advantage of the cyclonic effect is a pre-separation of the biggest particles that could damage the sleeves.

Because of its more resistant round shape it can resist to pressure-vacuum:
- Safe installation for Atex zone, protected by explosion vents
- Pneumatic conveying installation
- Cleaning units with vacuum pressure
- Separation of products with high pressure (fine grinding with turbosifter,...)

It can also do a product separation:
- Fines (premix and micronized powders)
- Abrasives (minerals or grains)
- Specific products (starch, chicory, gluten, sunflower cakes, soya, canola)

Regulation
- Atex 94/9/CE compliance on demand
- Compliance to the regulations in force and to specific requests in regard of dust discharge
- Air tank compliance to the 97/23/CE pressure equipment directive, do not require to be proofed again
High capacity sleeve filter

Sleeve filter unit for pneumatic transfer

Parallelepipedic sleeve filter

Sleeves filters with rotary extractor

Low capacity sleeve filter

That range of sleeve filters has been especially designed to meet the requirement regarding:

• Silos decompression
• Pneumatic conveying
• Mixer decompression

1400 m² sleeve filter

Dust sensor

The installation of a dust sensor at a cleaning filter outlet can detect an abnormal amount of dust in an air flow. Some versions can also do a measurement of atmospheric wastes.

In the first case, it can:

• Detect a damaged filtering media
• Detect an explosive atmosphere (Atex)

In the second case, it can also check the compliance to the rules relating to dust wastes.
Centralised Cleaning

Purpose

Stolz offers centralised cleaning solutions for long distances and with high vacuum pressure. That system includes a suction turbine with a fixed filter plug to a piping network covering the silo or factory. It allows an operator to clean by suction without effort and without dust emission in all critical zones.

The wastes are continuously evacuated to the dust flow path or to good product flow path (overflow recovery) without bags, containers or bins handling.
Advantages
• Improvement of working conditions
• Easy to use
• Safety

Technical characteristics
• Cyclofilters
• Multistage turbine
• Sealed air lock with pneumatic valves
• Pneumatic handling type piping with high radius elbow
• Assembly by bolted coupling without welding
• Suction inlet with automatic closing flap
• Cleaning accessories

Safety
• ATEX compliance

Differential pressure unit
Cyclonic separation
Handling equipment & Dedusting

Grinding

Thermal conditioning & Cooling

Pelletizing

Mixing & Coating

Sifting & Cleaning

Services