

HOVING HOLLAND

mushroom and composting equipment

MUSHROOM EQUIPMENT PHASE I - II - III

**YOUR PARTNER FOR
MEASURED EQUIPMENT**



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Hoving Holland was founded in 1930. The company is established in the north of the Netherlands in Stadskanaal. At first the company manufactured under-carriages. After some twenty years Hoving Holland turned to conveyors for agricultural purposes and this is still one of the products of Hoving Holland. The moment the mechanisation of mushroom-cultivation started, Hoving Holland was involved in manufacturing these machines. Into the seventies Hoving Holland started to export mushroom machinery. Since then Hoving Holland has realised many innovations in mushroom machinery and compost systems.

Also Hoving Holland is active in the production of equipment for organic waste disposal and can look back on many years of experience. Hoving Holland has long been recognized as one of the leading suppliers to turnkey projects worldwide, therefore you can be assured of installations that are innovatively developed and manufactured with high quality standards. This makes Hoving Holland the best partner for you to realise your business. From concept to manufacturing to installation and service, Hoving Holland will provide you with everything you need to reach your goals, as well in mushroom machinery, compost systems, waste disposal equipment as in conveyors.

In this brochure you will find the most common equipment. Hoving Holland however adapts all machines to each specific project. So for each project in this area we can prepare and discuss a proposal which fits your business the best.

Hoving Holland offers

- Consultancy on composting equipment
- Design of composting equipment (including electric and hydraulic systems)
- Manufacturing of equipment
- Supervision
- Service
- Turn key delivery

Bunkers

- Layouts
- Bale dunking
- Transport line straw bales
- Cord removing unit
- Straw mixing unit
- Reducer elevator
- Chicken litter hopper
- Conveyor (with spinner)
- Central conveyor
- Cascade conveyor
- Moving floor hopper
- Discharge wagon
- Top filling system
- Bunker filler

Tunnels

- Layouts
- Central conveyor
- Movable conveyor
- Cascade conveyor
- Discharge wagon
- Tunnel filling cassette
- Tunnel winch phase II & III
- Spawning unit
- Bag filling / Tray filling sytem
- Storage hopper
- Block press
- Compost wagon
- Truck loading sytem
- Net washer

Growing rooms

- Layouts
- Casing soil mixer
- Head filling machine
- Shelf winch
- Shelf emptying conveyor
- Truck hopper

LAYOUT OF THE BUNKER EQUIPMENT

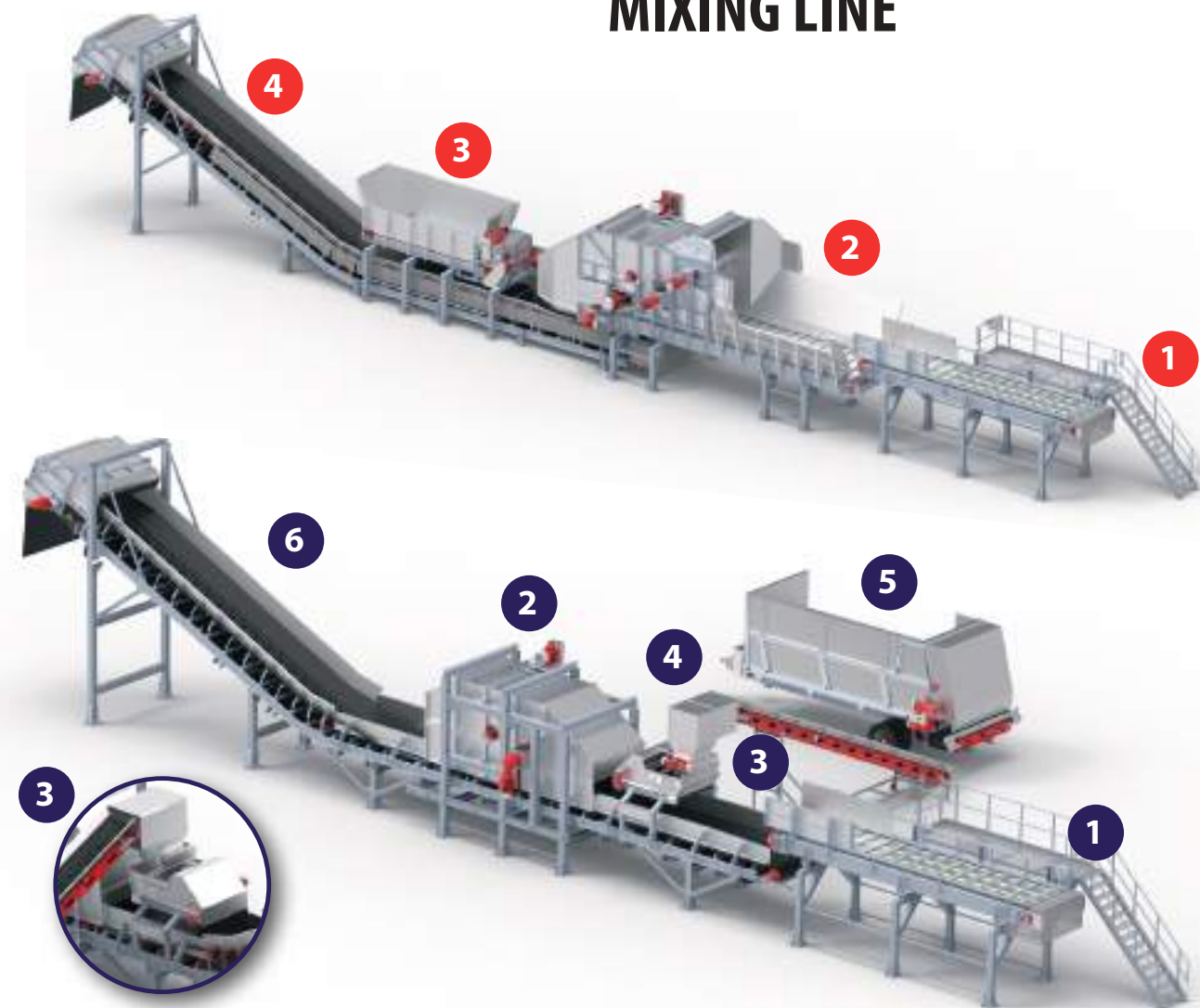
Depending on the requirements of the project and according the wishes of the customer, Hoving Holland starts a project by preparing a 2D-layout. With this design the equipment can be fit to the building and the available space on site.

After the 2D design has been approved, the 3D detail engineering will be started. The images below show a design for the bunker area in 2D and 3D configuration. Depending on the wishes of the customer, machines can be added or removed. The next pages show several machines which are used in the bunker area to prepare phase I compost.

- 1 Transport line straw bales
- 2 Straw mixing unit
- 3 Chicken litter hopper
- 4 Inclined conveyor with mixing spinner

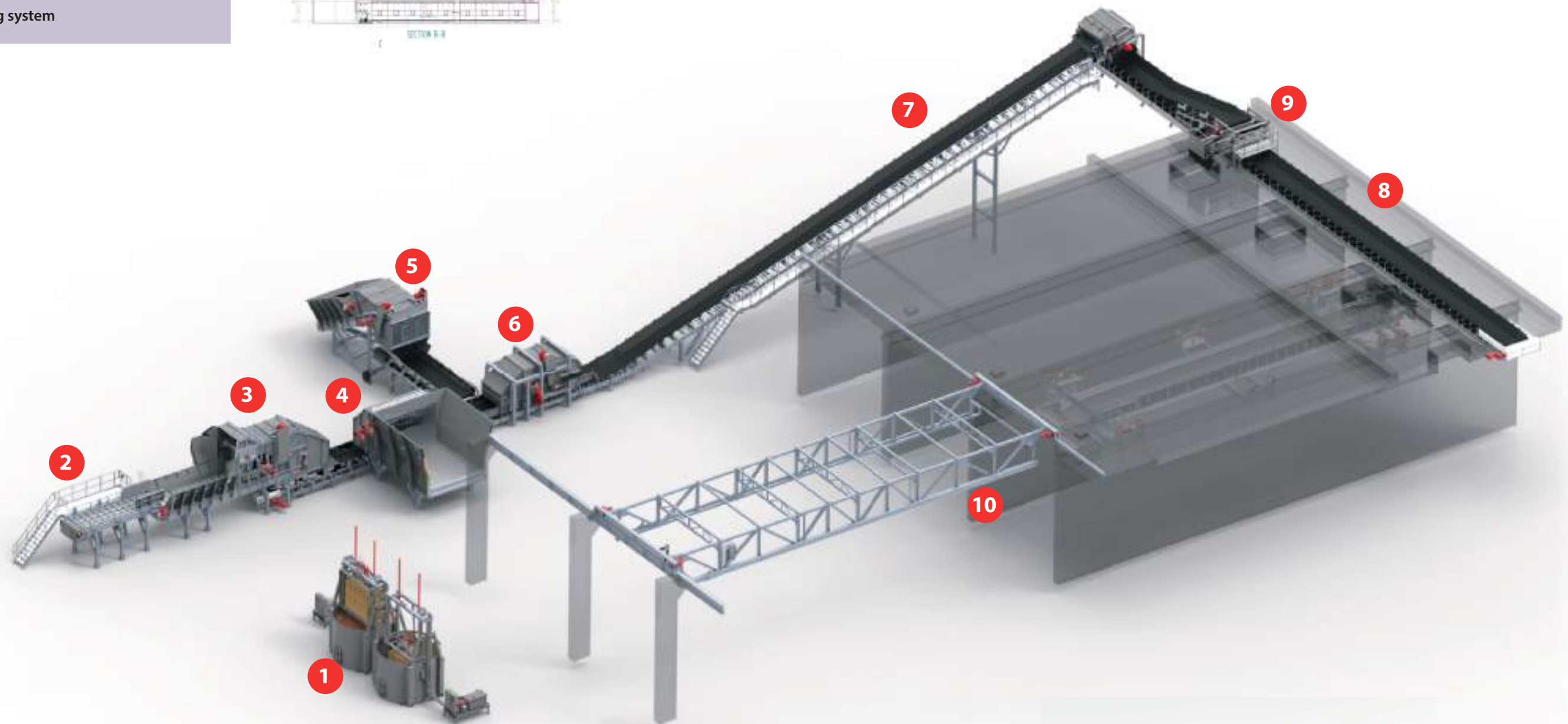
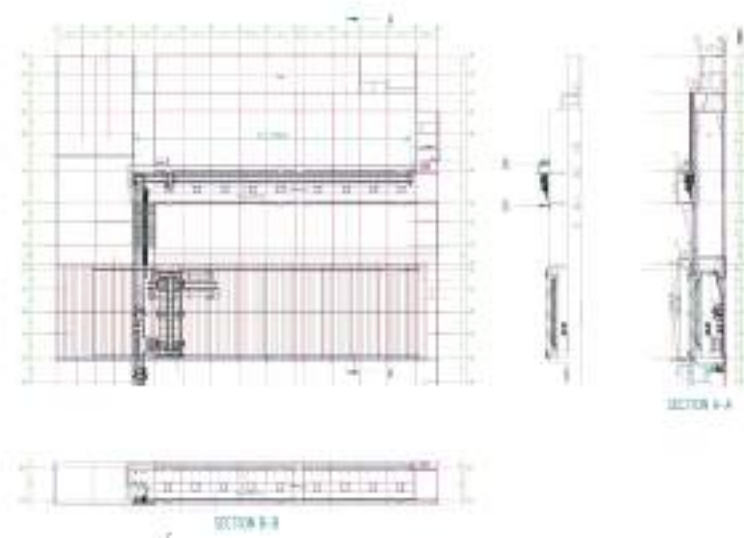
- 1 Transport line straw bales
- 2 Conveyor mixing unit
- 3 Chicken litter distributor
- 4 Cross conveyor
- 5 Chicken litter trailer
- 6 Inclined conveyor with mixing spinner

STAND-ALONE MIXING LINE



LAYOUT OF THE BUNKER EQUIPMENT

- 1 Bale dunking installation
- 2 Transport line straw bales
- 3 Straw mixing unit
- 4 Moving floor hopper
- 5 Chicken litter hopper
- 6 Conveyor mixing unit
- 7 Inclined conveyor to bunker roof
- 8 Central conveyor
- 9 Discharge wagon
- 10 Top filling system



BALE DUNKING

The bale dunking system is used to efficiently pre-wet bales before further processing. The dunking time can be adjusted to a desired period of time. The bale cage will automatically be lifted out of the basin when the set dunking time has expired.

The installation consist of a cage, which can contain two bales (2,4x1,2x1,2 meter) and is lifted and lowered in a stainless steel basin (26 m³), by two hydraulic cylinders. The bales will be clamped in the cage to avoid drifting. Due an overflow tube the excess water will be re-used for the other side.

Usually directly after dunking, the bales are removed from the installation and stored for some time again, before further processing.



TRANSPORT LINE BALES

The Transport line bales is used to supply square or round bales to the Mixing line. The machine is equipped with a bottom chain, which is driven electrically (speed controlled). When the strings around the bales have to be removed manually, the machine can be delivered with a larger platform.

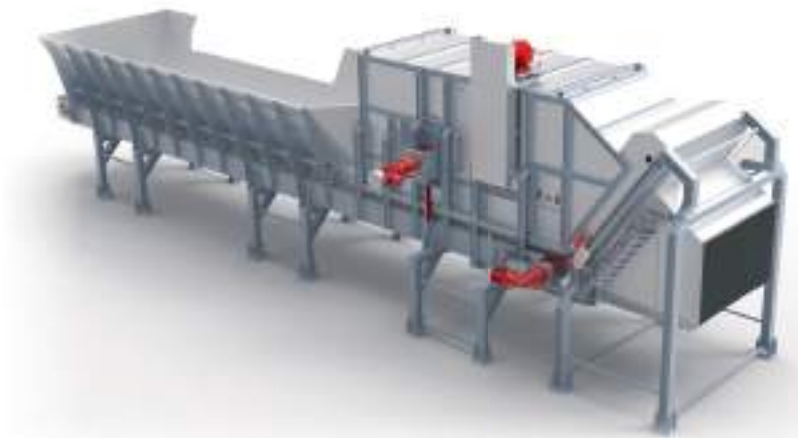
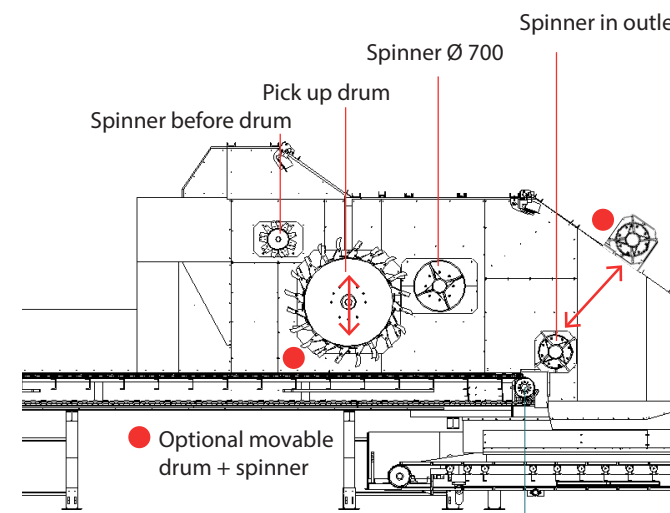
CORD REMOVING UNIT

The Cord removing unit is capable of removing the cords or strings from up to 80-90 bales per hour. The unit is positioned between the Transport line for the straw bales and the Straw mixing unit. Most actions in this machine are hydraulically driven, so the machine is equipped with its own electric-hydraulic aggregate. A small conveyor discharges the cords from the machine.



STRAW MIXING UNIT

The Straw mixing unit is equipped with a large rotating pick up drum with hooks to loosen the bales of straw and to mix the ingredients which have been added. Just before this drum also water is added to the straw. Depending on the use of a Cord removing unit and the position(s) of Reducer elevator(s) the dimensions of the Straw mixing unit can be changed.



CONVEYOR MIXING UNIT

The conveyor mixing unit is driven by a two meter wide conveyor where the unit is placed on, the base frame is heavy duty with galvanized profiles, impact bars and home made steel rollers to withstand the forces between the pick up drum and conveyor. The pick-up drum is adjustable in height.



REDUCER ELEVATOR

Reducer elevators are available with different capacities, resulting in different bottom widths.

- ① Width 2,0 mtrs - capacity 40 - 100 tons/hr
- ② Width 2,5 mtrs - capacity 100 - 150 tons/hr
- ③ Width 2,9 mtrs - capacity 150 - 250 tons/hr
- ④ Width 4,0 mtrs - capacity 250 - 350 tons/hr

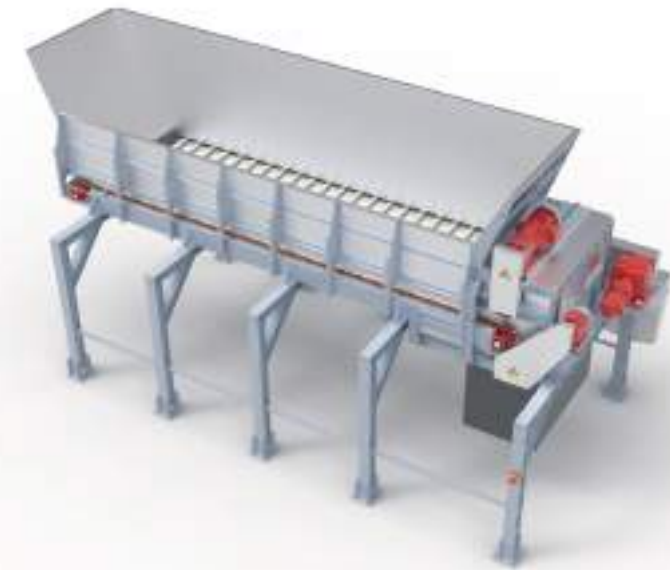
The Reducer elevators can be equipped with options like water supply, hydraulic height adjustment of the kickback drum and an additional spinner. The largest model is equipped with an automatic lubrication system for the bottom chain. Depending on its use wheels can be mounted or the bulkhead can be left out.



CHICKEN LITTER HOPPER

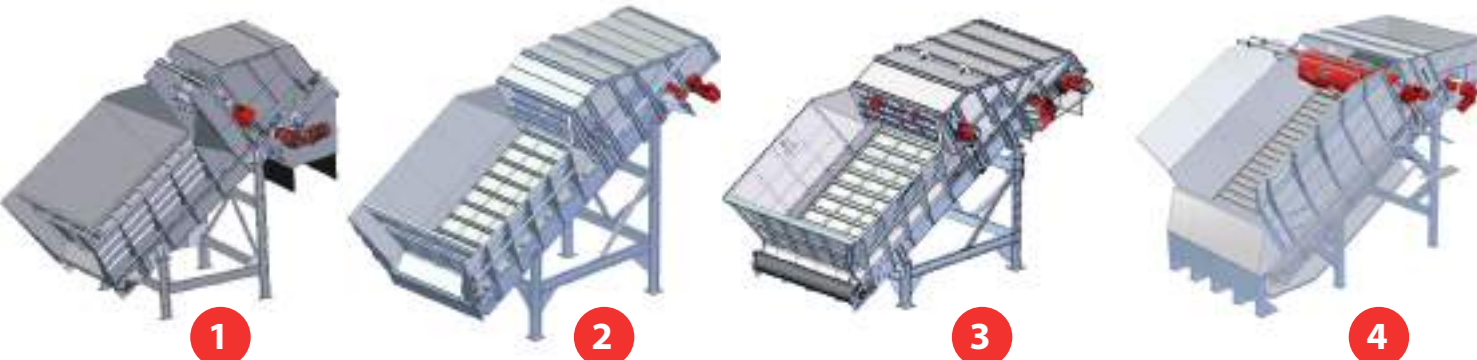
With the central control system of the Blending line the added amount can be adjusted. The Chicken litter hopper can be positioned above a conveyor to add relatively small amount of chicken litter to the mixture.

The Chicken litter hopper is filled with use of a loader. A flail is mounted in the outlet to break the lumps in the chicken litter.



CHICKEN LITTER TRAILER

The Chicken manure wagon is designed to transport, store and discharge Chicken manure. It mainly consists out of a bottom chain inside a hopper with reducing spinners and a cross conveyor assembled on a mobile underframe with dual tires. The Chicken manure is loaded into the hopper by a front loader. The total capacity of the trailer is 15 m³.



MOVING FLOOR HOPPER

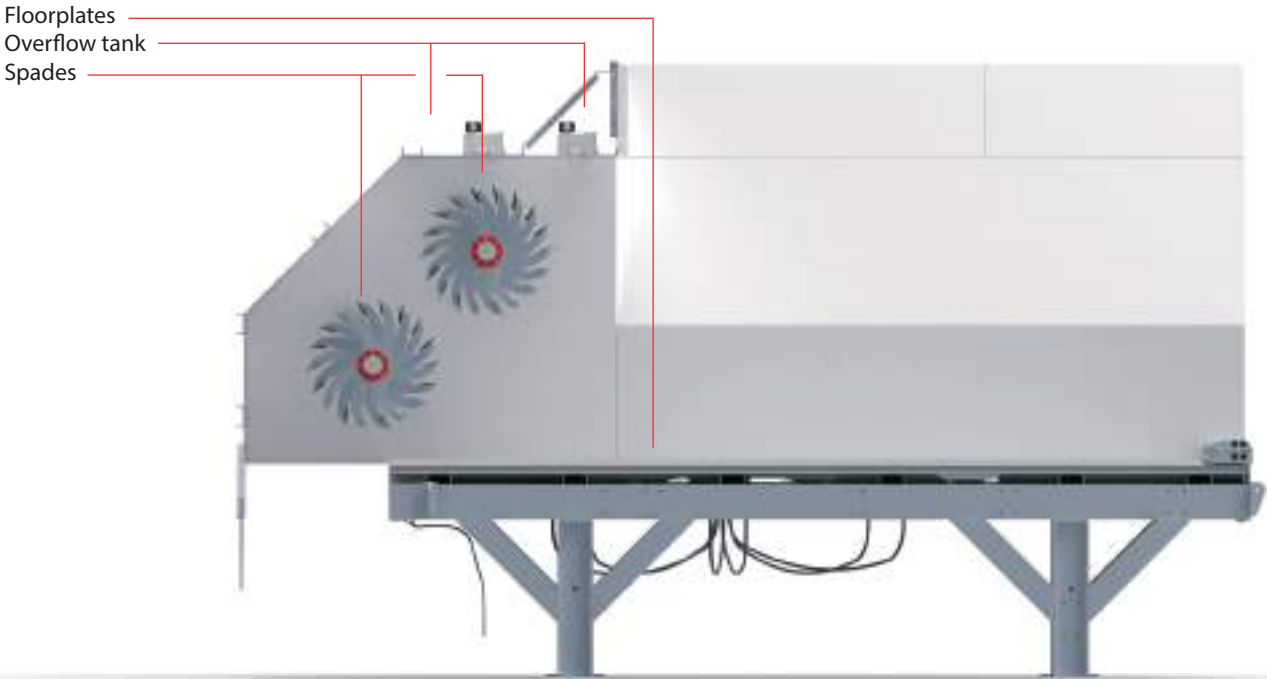
The Moving floor hopper has been carefully engineered, to ensure great stability and efficiency. Due to a well thought operating system, we can reach up to 500+ tons/hr. Front loaders can dump a single charge up to 12 tons.

The Moving floor hopper can be delivered in two versions; 4 meter and 5 meter bottom width. Both designs have high power spade spinners and wear resistant floorplates. Another advantage compared with a reducer elevator is the relatively low discharge height.



The hopper is constructed in a modular way, allowing easy access for maintenance and simple exchange of components. The sidewalls are made of stainless steel sheeting and the spade-hammers are manufactured from wear-resistant material.

The hydraulic unit can be placed according the choice of the customer. This unit will supply the Walking floor of oil, by means of high power flexible hoses or stainless steel tubing. The hydraulic unit also has an oil heater and cooler to keep the oil at the optimal temperature for operation. The hydraulic components that are sensitive for corrosion, will be placed in a sealed electrical cabin at the side of the machine.



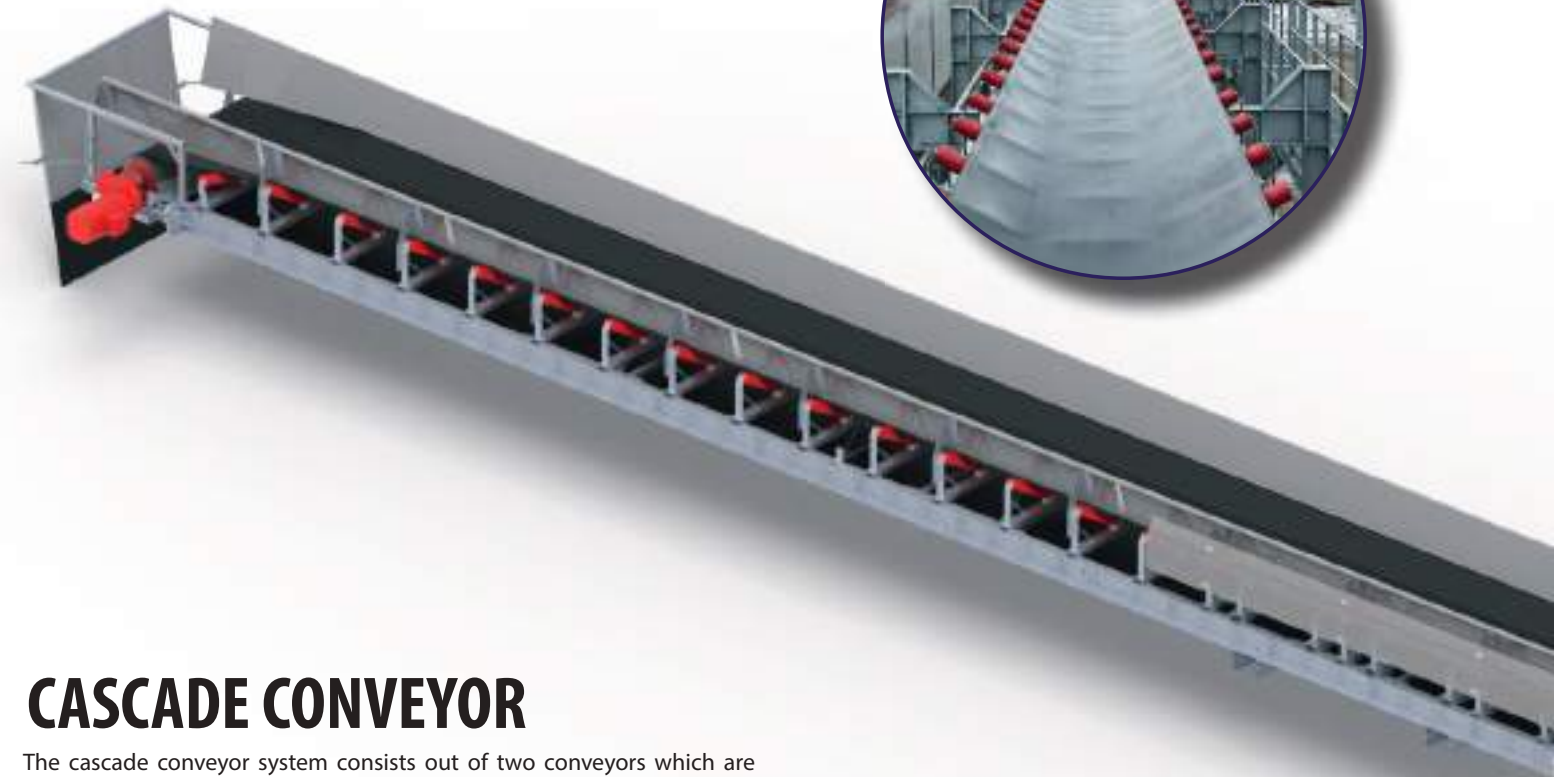
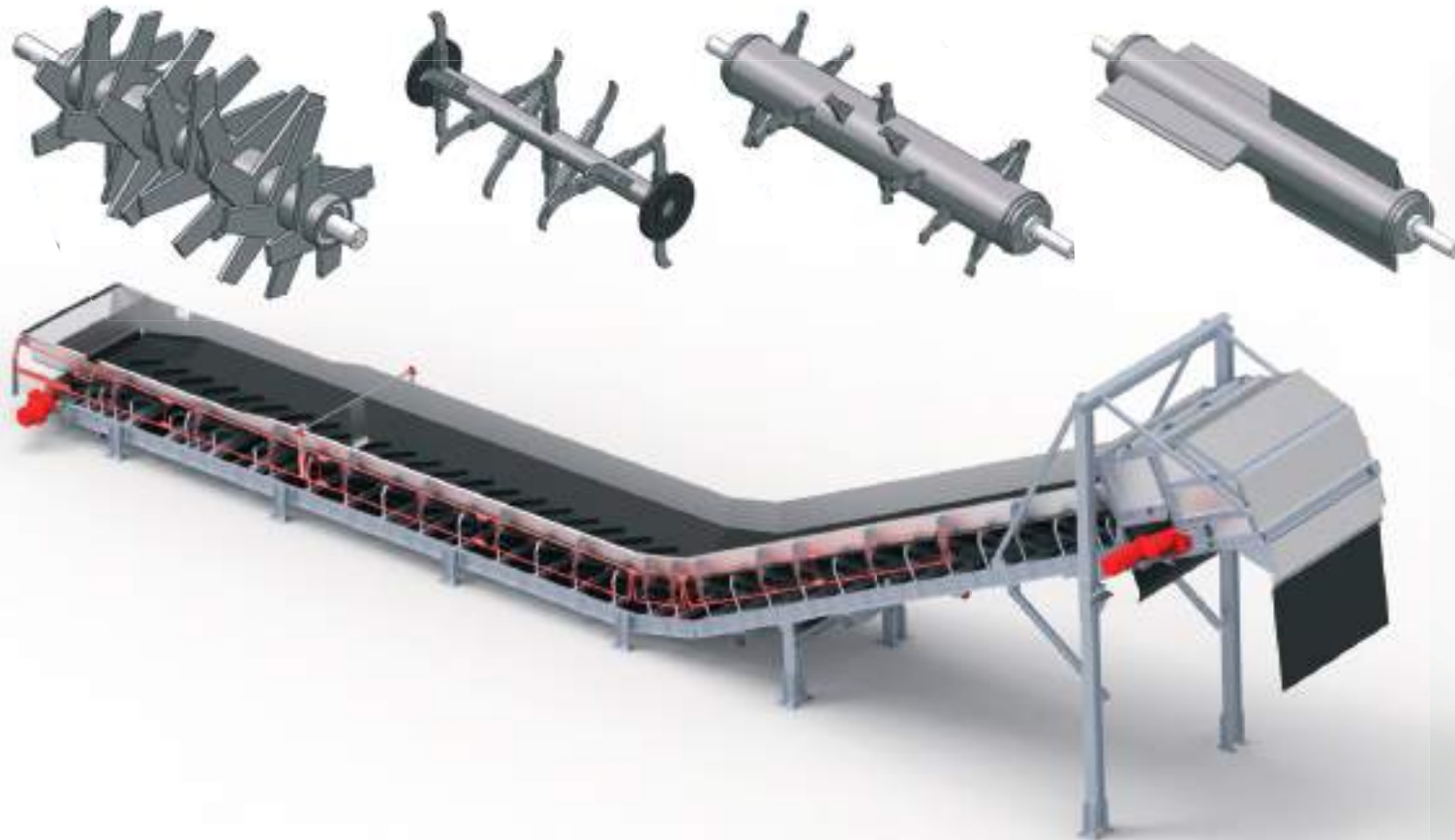
CONVEYORS

Conveyors are available in several types and widths. The Conveyors can be equipped with side boards, covers and deflection plates. Another option is the use of a mixing spinner. Different types can be chosen.



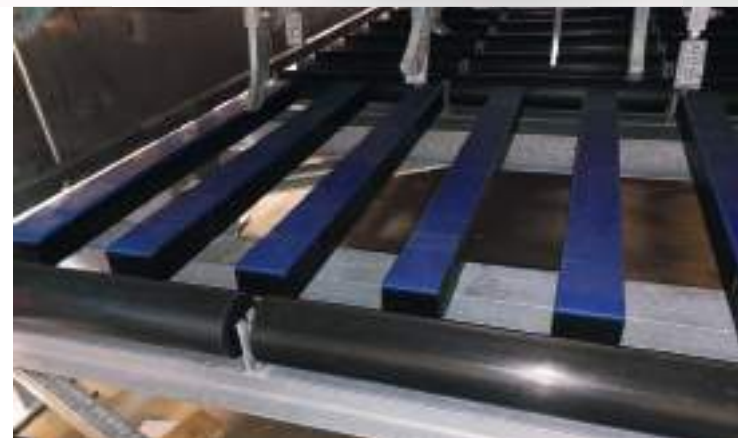
CENTRAL CONVEYOR

The Central conveyor is positioned on top or in front of the bunker roof. Available are a fixed belt with a Discharge wagon or a system with two conveyors on top of each other. Central conveyors for phase I compost are usually made out of stainless steel.



CASCADE CONVEYOR

The cascade conveyor system consists out of two conveyors which are placed in line above each other and one or both conveyors are moveable. They are used for filling bunkers, tunnels, spawning or for truck loading.



DISCHARGE WAGON (PHASE I)

The Discharge wagon is running on the main frame of the Central conveyor. Power is supplied with use of a flat cable hanging from a rail. With use of the driven roller of the machine and the running of the central conveyor the Discharge wagon can be moved to the required position.

A cross belt on the wagon moves the compost to the hatch in the bunker roof on the main belt of the Top filling system. The wagon is usually made out of stainless steel.



TOP FILLING SYSTEM

Top filling system with bridge. The Top filling system is equipped with its own control system to obtain optimal settings for the filling pattern. The Top filling system can be made out of stainless steel.

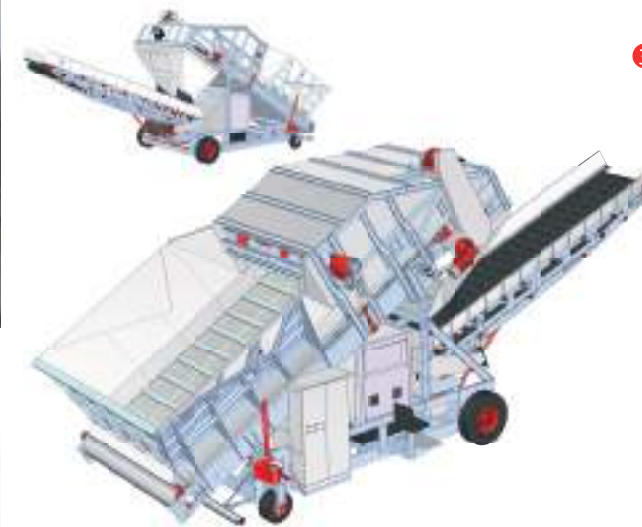


BUNKER FILLER

Bunker fillers are available in several capacities from 40 up to 300 tons per hour. Also several options are available, like hinged side walls to load from the side or a generator for its own power supply. Also automatic filling is possible.

Hoving Bunker fillers are used to fill phase I bunkers and phase II pasteurisation tunnels.

- ① Width 2,0 mtrs - capacity 40 - 100 tons/hr
- ② Width 2,5 mtrs - capacity 100 - 150 tons/hr
- ③ Width 2,9 mtrs - capacity 150 - 250 tons/hr
- ④ Width 4,0 mtrs - capacity 250 - 350 tons/hr



LAYOUT OF THE TUNNEL EQUIPMENT

The typical tunnel building is designed with a phase II and a phase III side. The design usually includes one or more Tunnel winches, a Cassette and a Spawn feed conveyor.

Both sides are equipped with a Tunnel winch to empty the tunnel. Each side also has its own Central conveyor. The Central conveyor phase II is used to supply and refill. The Central conveyor phase III is used to discharge the compost.

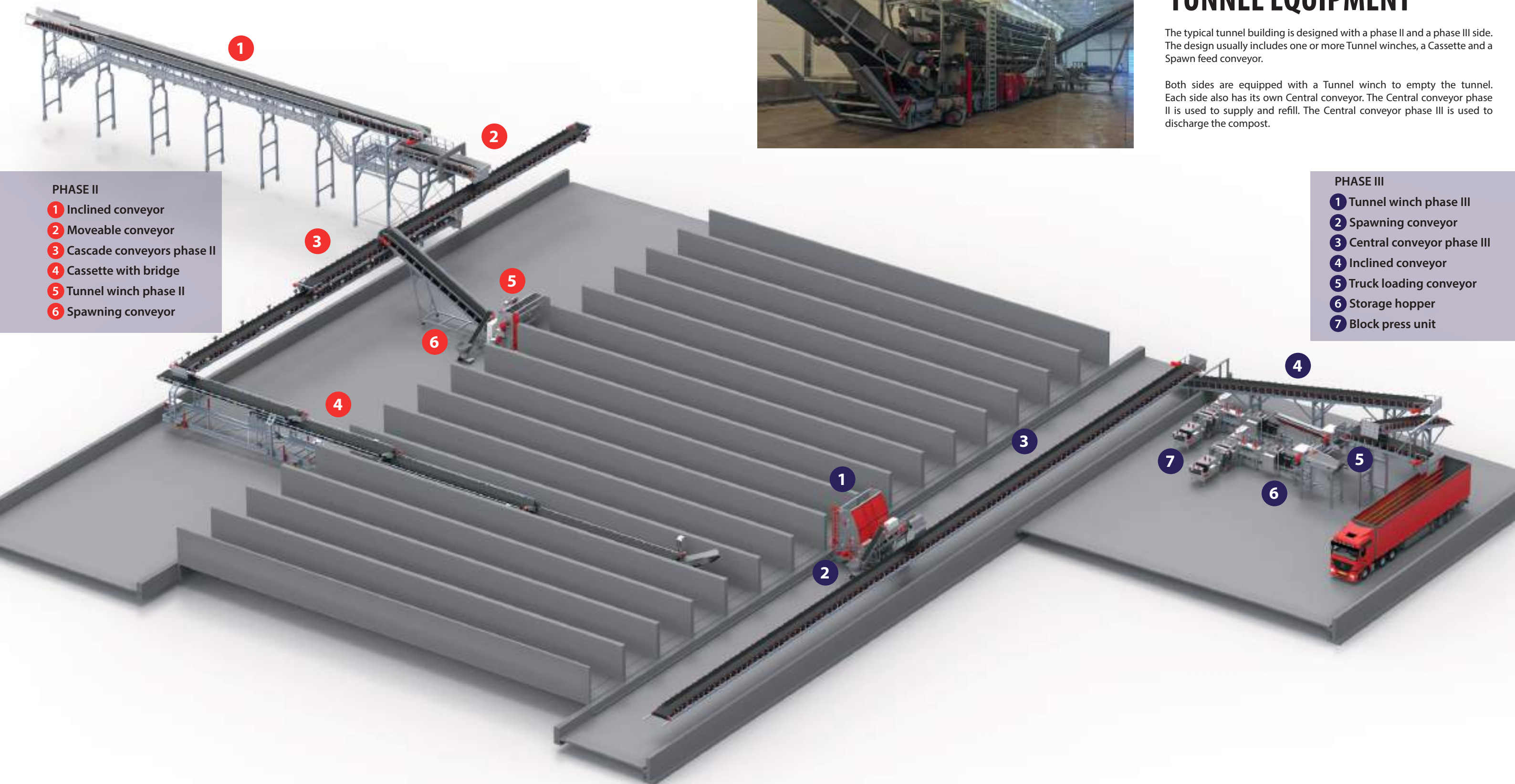


PHASE II

- 1 Inclined conveyor
- 2 Moveable conveyor
- 3 Cascade conveyors phase II
- 4 Cassette with bridge
- 5 Tunnel winch phase II
- 6 Spawning conveyor

PHASE III

- 1 Tunnel winch phase III
- 2 Spawning conveyor
- 3 Central conveyor phase III
- 4 Inclined conveyor
- 5 Truck loading conveyor
- 6 Storage hopper
- 7 Block press unit



MOVEABLE CONVEYOR

The Moveable conveyor is the link between the Supply conveyor and the Central conveyor of the tunnel building. After moving the conveyor out of the building, the building can be closed to create a small over pressure inside.

The conveyors can be equipped with stairs and platforms for maintenance purposes



DISCHARGE WAGON (PHASE II)

The Central belt supplies the compost to the filling process. The moveable Discharge wagon guides the compost sideways through a funnel onto the top belt of the Tunnel filling cassette or on the tunnel filling head.



As alternative for a fixed Central conveyor with a Discharge wagon, a Central conveyor system can be applied with a Fixed conveyor on top and a Moveable conveyor underneath. The belt of the lower conveyor can run in two directions. The conveyor is moved with a sprocket and a chain using an electric motor.

CASSETTE

The Cassette is designed to the length and width of the tunnels and the working area in front of the tunnels. Of course also the desired capacity is taken into account.

Hoving Bunker- and Tunnel filling cassettes can be used for filling phase I bunkers, for filling phase II pasteurisation tunnels and phase III spawn-run tunnels.

Hoving Tunnel filling cassettes can be delivered in different types. The V-model design implies that belts are running in a V-shape except the swivel belt which is equipped with a plain belt. The open structure of the construction makes the machine lighter and easier to clean and maintain.



TUNNEL WINCH (PHASE II & PHASE III)

The Tunnel winch suits tunnels with widths of 3 to 4 meters and a length up to 44 meters.

- Electrically or hydraulically driven
- Adapted to tunnel floor height differences
- Variable speed control
- Stainless steel framework



PHASE III

The Tunnel winches are used to pull the compost out of the tunnels which is lying on a net. At the phase II-side the compost is supplied to the Central conveyor The Cassette will spread the compost in the tunnels again. The winch at the phase III-side will remove the compost from the tunnels for further processing.



SPAWNING SUPPLY

Hoving constructs at your request spawning machines. Spawning machines can be placed on several different machines. Such as Head filling machines, on belts of Tunnel winches, Inclined conveyors or in Blending lines.

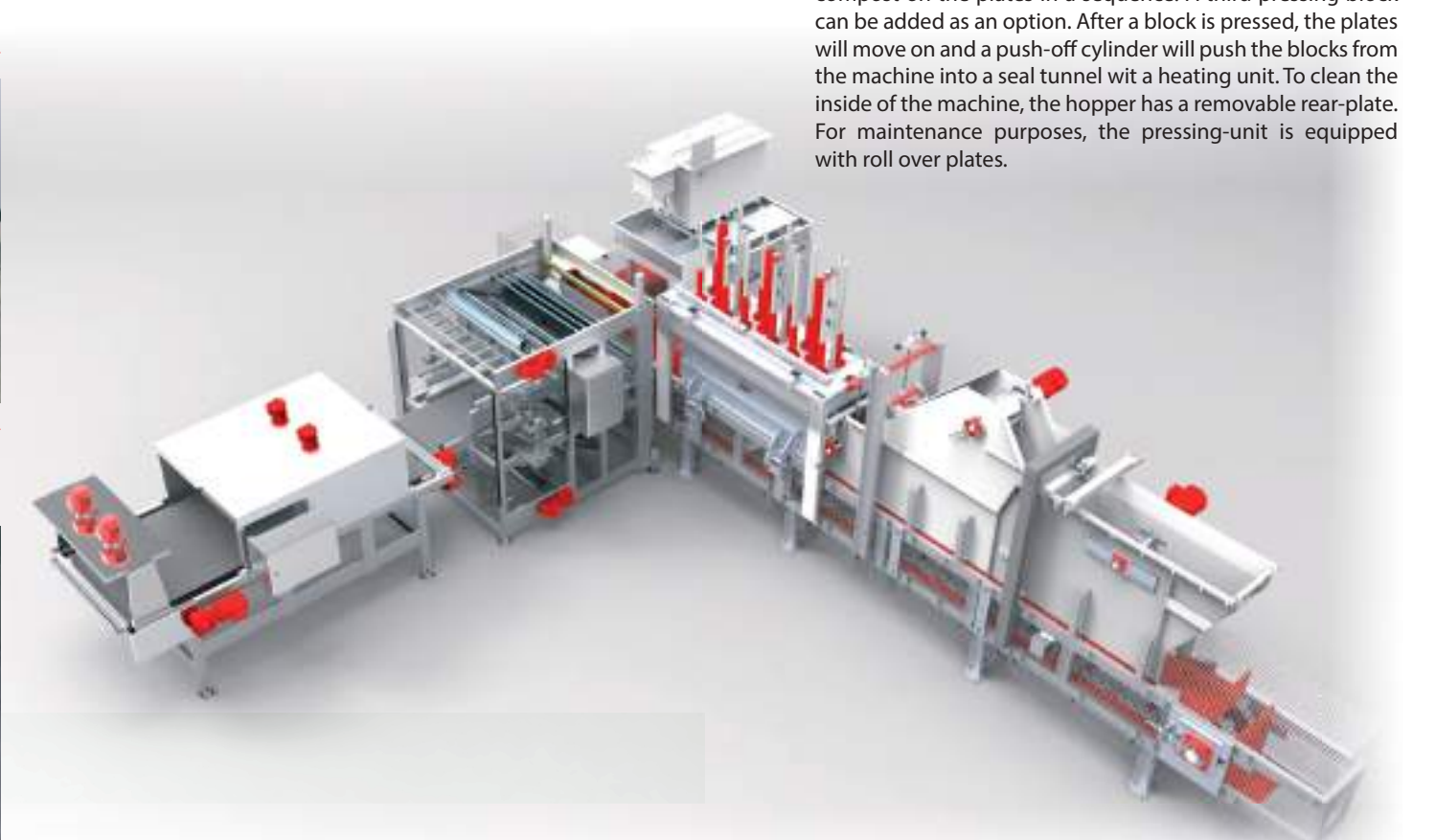
In addition to a standard spawn conveyor, we have the option to apply a Big-Bag system as infeed for the supplements. The Big-Bag easily can be replaced with the use of a forklift. We also can execute the conveyor with a weighing system.



BLOCK PRESS LINE

As alternative for the Bag or Tray filling system, the shelves can be filled with blocks. A Block press line together with a seal unit can provide these blocks. The compost and casing soil can also be supplied as bulk to a Head filler with use of compost and casing soil wagons.

The machine turns loose compost into blocks. Different sizes of blocks are possible. Spinners in the machine loosen up the compost. Pressing plates, mounted on a chain, transport the compost. Before the compost is pressed into blocks, a drum with a star-shaped model doses the compost and an equalizing chain levels the compost. The pressing-line is equipped with 2 pressing-units, each one pressing the compost on the plates in a sequence. A third pressing block can be added as an option. After a block is pressed, the plates will move on and a push-off cylinder will push the blocks from the machine into a seal tunnel with a heating unit. To clean the inside of the machine, the hopper has a removable rear-plate. For maintenance purposes, the pressing-unit is equipped with roll over plates.



NET WASHER

This machine cleans the tunnel nets by spraying water to both sides of the net while the net is winded on the main drum. The speed of the pulling motors will be reduced automatically when the diameter of the pulling drum increases, so the actual pulling speed of the net remains the same throughout the tunnel.



CASING \ COMPOST WAGON

To transport and supply the compost and casing soil to the filling equipment for the growing rooms, these wagons can be used. The wagons have spades and a discharge conveyor to unload the materials. Due to a tow hook, the wagons can be moved by use of a tractor.



TRUCK LOADING CONVEYOR

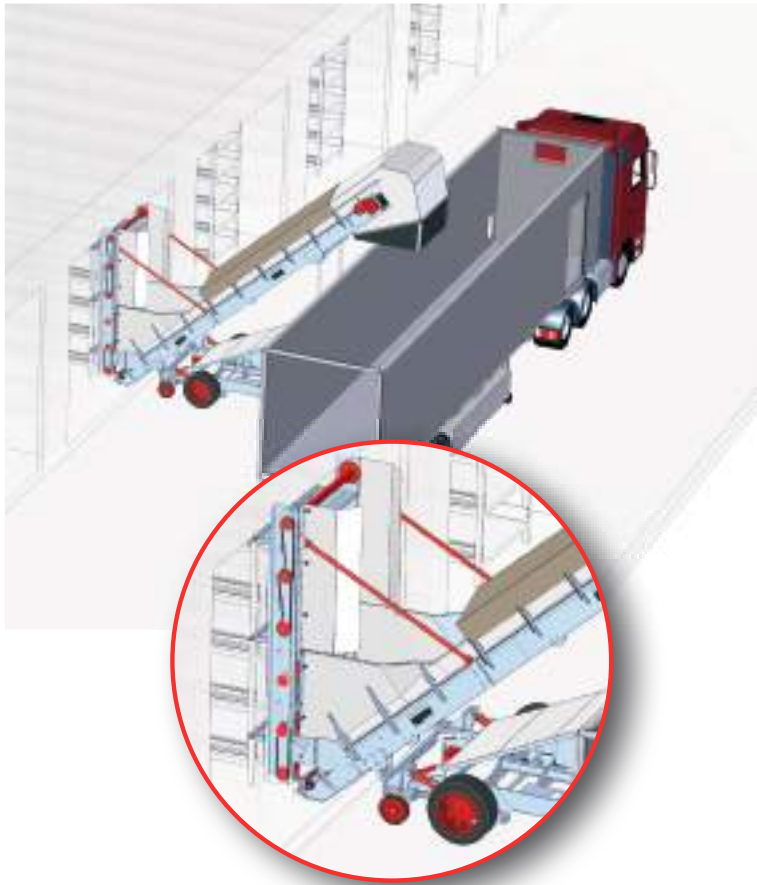
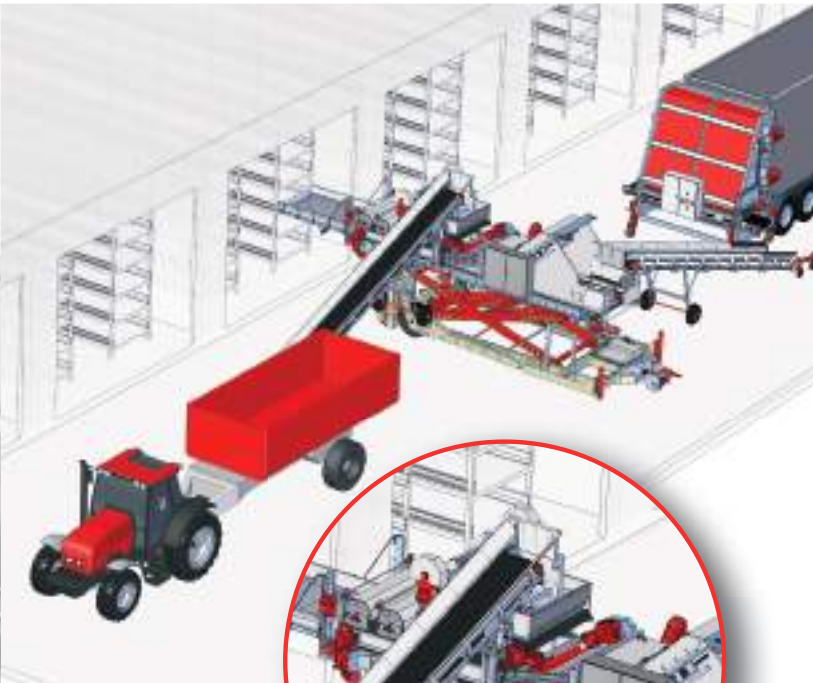
The Truck loading conveyor can be fixed to the building or can be positioned on the floor. A traverse conveyor, as shown on the top right picture, can load a trailer entirely without moving the truck. Truck loading also can be done by the use of a moveable discharge unit.



HEAD FILLING MACHINES FOR THE GROWING ROOMS

FILLING

EMPTYING



CASING SOIL MIXER

To prepare the casing soil for use in the growing rooms.
Total capacity of 2,7 m3.



TRUCK DOSING WINCH

The truck dosing winch is a unit that unloads a trailer with the use of a pulling net. A total of 4 spinners will break up and unload the compost. Due a fixed cross-conveyor, the discharge of the compost can be either to the right or left side of the machine. The compost will feed the inclined conveyor(s) of the Head filling machine. Due to jacks and caster wheels the machine can be adjusted to various heights and positions.



TRUCK MOVING FLOOR

The truck moving floor is a floor system that can be mounted on standard trailer chassis. Due to hydraulic movement the trailer is self-sufficient in discharging the compost. Various lengths are available; 9.600, 11.600 & 13.300 mm.



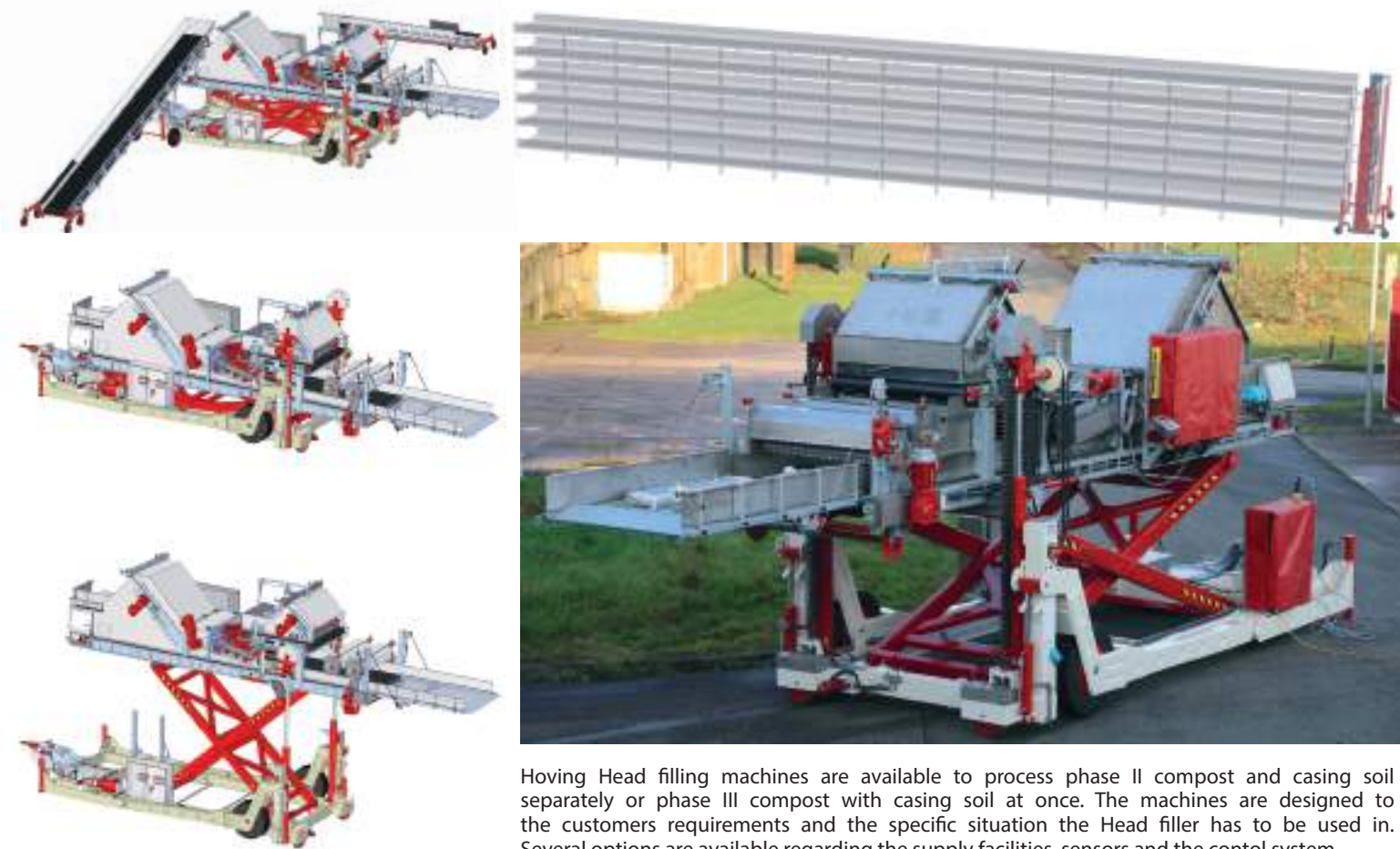
TRUCK HOPPER

The Truck hopper is used to add a constant flow of compost to filling machines. The machine is designed to be connected to a trailer which empties itself into the hopper. The combination of the hopper and the kick back drum realizes a constant flow of compost.

Operation principles:
Compost is dumped in the Truck hopper from a trailer. A bottom chain with scrapers transports the compost towards the kick back drum. This rotating drum makes sure a constant flow of material is dumped on the Inclined conveyor for further processing. The machine can be manually controlled from a control box.



FILLING EQUIPMENT FOR GROWING ROOMS

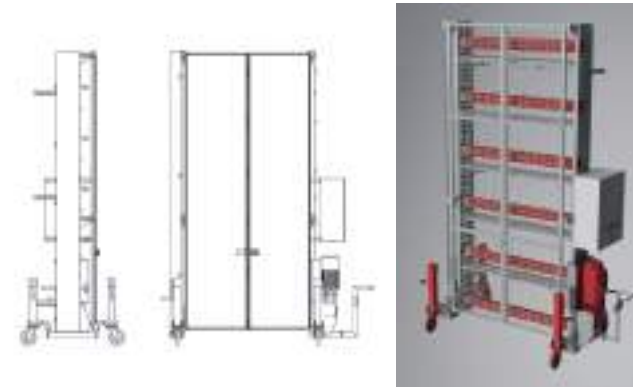


Hoving Head filling machines are available to process phase II compost and casing soil separately or phase III compost with casing soil at once. The machines are designed to the customers requirements and the specific situation the Head filler has to be used in. Several options are available regarding the supply facilities, sensors and the control system.



FILLING EQUIPMENT FOR GROWING ROOMS

The Shelf winch is used together with the Head filling machine to pull the nets onto the shelves. The Shelf winch is connected to the control system of the Head filling machine.



EMPTYING EQUIPMENT FOR GROWING ROOMS

Hoving Wide inclined conveyors and Emptying conveyors come in different types.

- Suitable for different widths of shelves
- Short wheel base
- Hydraulic height adjustable belt
- Hydraulic operated winches
- Four wheel drive to manoeuvre
- Floor compensating system



INTERNATIONAL REFERENCES

NOTES





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Engineering:
Phase I indoor systems
Phase I outdoor systems
Phase II tunnel systems
Phase III tunnel systems
Growing systems

Blending lines
Compost turners
Shelf winches
Reducer elevators
In-house tunnel fillers
Tunnel filling lines
Tunnel filling cassettes
Casing soil mixers
Discharge units

Spawning / additive distributors
Truck loading systems
Shelf filling machines:
• fresh compost
• casing soil
• pasteurised compost
• spawn-run compost
Tunnel winches
Compost watering systems
Shelf emptying conveyor belts
Tray filling lines
Tray emptying lines
Block pressing lines
Bag filling lines
Central conveyor belt systems
Compost / casing soil mixers

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