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Flat-bottom bins

Placing your crop in a high-quality storage facility after harvesting has a positive effect on its added value.

Whether on account of the distance to the collection point, the desire to allot the harvest, or the wish to maintain marketing freedom over your grain, there are a variety of reasons that lead our customers (storage agencies, cooperatives looking for extra storage capacity, farmers seeking greater autonomy) to consider the possibilities of a storage solution.

For these reasons, and on the strength of our experience working alongside our storage customers, at GGS we have defined particular specifications to meet the demands and needs of the French market.

To ensure strict compliance with these data and while taking into account all applicable standards, GGS has developed a range of bins perfectly suited for use on farms as well as in cooperatives or storage agencies.

Our silos are manufactured in a CE-certified plant with ISO 9001 certification that complies with the EN1090 standards.

GGS guarantees long life for your installation through robust design and innovative materials.

By controlling your storage you will be able to control the resale of your harvest, in a context where market rates are increasingly volatile, so that you can benefit from peaking prices to get the best value from your production.

With diameters ranging from 3 m to 32 m, we can supply "made-to-measure" solutions according to your needs, and make adaptations for add-ons to your installation.

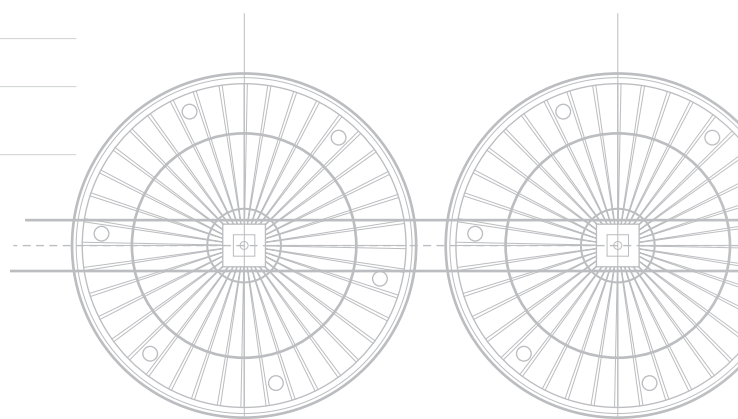
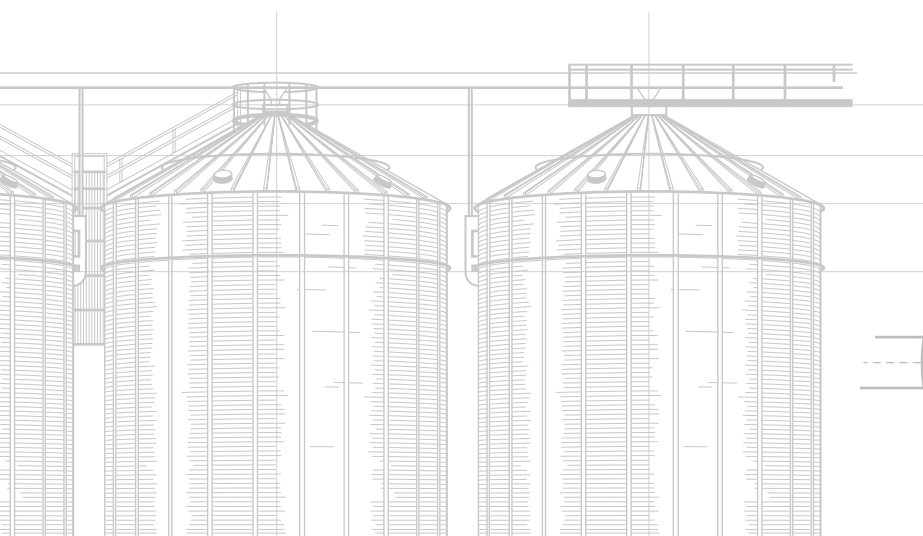
Thanks to our wide range of accessories (roof ladder, wall ladder, small or large door, aeration controller, temperature sensor, humidity gauge, unloading via scraper auger or conveyor) you maintain control over your project. We can offer you a comprehensive range of off-the-shelf solutions, and help you define the installation that is perfectly suited to your needs.

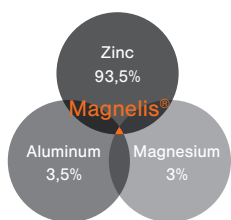
According to the market, we can adapt to ANSI-ASAE, DIN, EUROCODE or other standards. Depending on the location of the installation, new basic data can be incorporated in the structural calculations: internal factors such as stored product loads (angle of repose, density, internal friction) or specific weight, and external factors such as seismic zone, wind, snow, or if the silo is to be situated in a harsh environment (by the sea, for example).

The grain bins are extremely robust, making it possible to install fixed handling systems and catwalks on their roof caps.

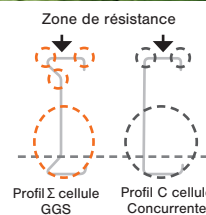
Benefits

- Capacity from 34 to 34,000 m³.
- Galvanisation: 600g/m².
- Fast assembly
- Diameters from 3 to 32 m
- High-quality aeration
- Cylinder height up to 34.25 m
- Fast unloading
- Standard foundation bracket
- Magnelis roof
- Simplified civil engineering





With a 30° sloping Magnelis roof that has a retractable roof cap and pre-drilled panels for the fans, the quality requirements are fulfilled. The Magnelis roof is exceptionally corrosion resistant, has self-repairing cut-edge protection and boasts a more ecological finishing.



The roof corrugation has a structural profile with a specific shape that increases resistance. The roof as a whole guarantees a perfectly watertight seal and the foam corrugation plugs prevent snow or birds from getting in. In silos with a timber roof (silos larger than 12.23 m), the beam profiles are in Σ (2.5 to 3 mm thick): more robust than C.



Diameter (m)	3	3.5	4.6	3.55	6.1	6.87	7.64	8.4	9.2	9.93
Rings	4-15	4-17	4-23	4-26	4-30	4-30	4-30	4-30	4-30	4-30
Capacity (m3)	34-122	47-190	81-442	110-674	146-1,013	187-1,284	233-1,594	288-1,931	349-2,339	414-2,792
Total height (m)	5.3-17.84	5.4-20.22	5.87-27.53	6.90-31.17	6.3-35.94	6.53-36.17	6.74-36.39	6.97-36.61	7.2-36.84	7.41-37.06

Diameter (m)	10.7	11.45	12.23	12.98	13.75	14.51	15.28	16.8	17.57	18.34
Rings	4-30	4-30	4-30	4-30	4-30	4-30	4-30	4-30	4-30	4-29
Capacity (m3)	486-3,145	562-3,623	651-4,134	755-4,678	843-5,239	951-5,842	1,065-6,499	1,315-7,891	1,457-8,652	1,605-9,130
Total height (m)	7.64-37.28	7.86-37.5	8.08-37.72	8.31-37.95	8.51-38.15	8.59-38.38	8.96-38.6	9.4-39.04	9.71-39.35	9.91-38.41

Diameter (m)	19.86	21.39	22.15	22.92	23.68	24.44	25.98	27.5	32.08
Rings	4-29	4-28	4-28	4-28	4-28	4-27	4-27	4-27	4-25
Capacity (m3)	1,926-10,752	2,280-12,117	2,174-13,012	2,670-13,961	2,887-14,935	3,110-15,397	3,585-17,488	4,097-19,669	6,027-25,380
Total height (m)	10.38-38.88	10.82-38.18	11.04-38.40	11.26-38.62	11.48-38.84	11.7-37.92	12.14-38.36	12.26-38.48	13.57-37.51

Silo aeration

Aeration is a must to ensure storage quality. The three concepts, perforated floor, channel and perforated cone, guarantee optimum aeration for different constraints.



PERFORATED FLOORS

A perforated floor is the most efficient way to aerate and preserve your grain. With aeration across 100% of the lower surface, aeration times are optimised, which reduces energy costs. Furthermore, as there is no contact with the ground, the health and safety of your grain are guaranteed.

Other benefits include easy cleaning of your silo, and fast and easy unloading, thanks to the installation's easy dismantling. The installation of the floors on a flat slab makes for simplified engineering.

With their unique design, our perforated floors are specially engineered to resist heavy loads. The galvanised steel slats guarantee long product life and, because they're pre-cut to the diameter of the silo, assembly is quick and easy.

Depending on the type of grain stored, two perforation models are available: Ø 1.27 mm or Ø 2.38 mm.

For easier installation of the transfer system between floor and concrete slab, two support heights are available: 310 and 430 mm.

Benefits

- Simplified civil engineering.
- Optimised aeration.
- Healthy grain conditions guaranteed (no contact between grain and floor).
- Different-sized perforations.
- Reduced aeration energy costs.
- Adaptable to all types of silo (regardless of diameter or height)

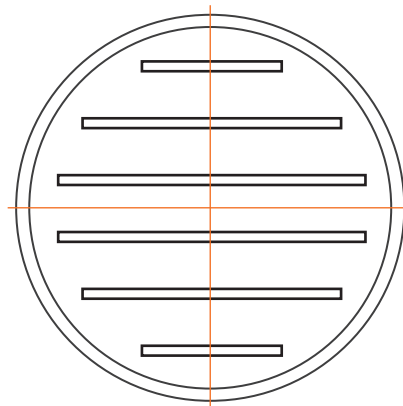
CHANNELS

Aeration using channels, a concept generally used in large-diameter silos, simplifies engineering with delivery of non-reusable formworks. Around 12% of the silo area will be equipped with channels.

The dimensions of the channels are defined by our engineering department, depending on the type of bin, the product stored, the renewal rate and the permissible air speeds.

Their design offers high load resistance. Designed to be able to be used for on-floor storage, they can support the weight of industrial vehicles.

The aeration grilles are extremely easy to dismantle, which facilitates cleaning.





AERATION CONE

With the only aeration cone on the market suited to the tallest grain bins, for diameters from 4.6 m to 12.23 m and up to 14 rings, GGS has the product best suited to the widest range of silos.

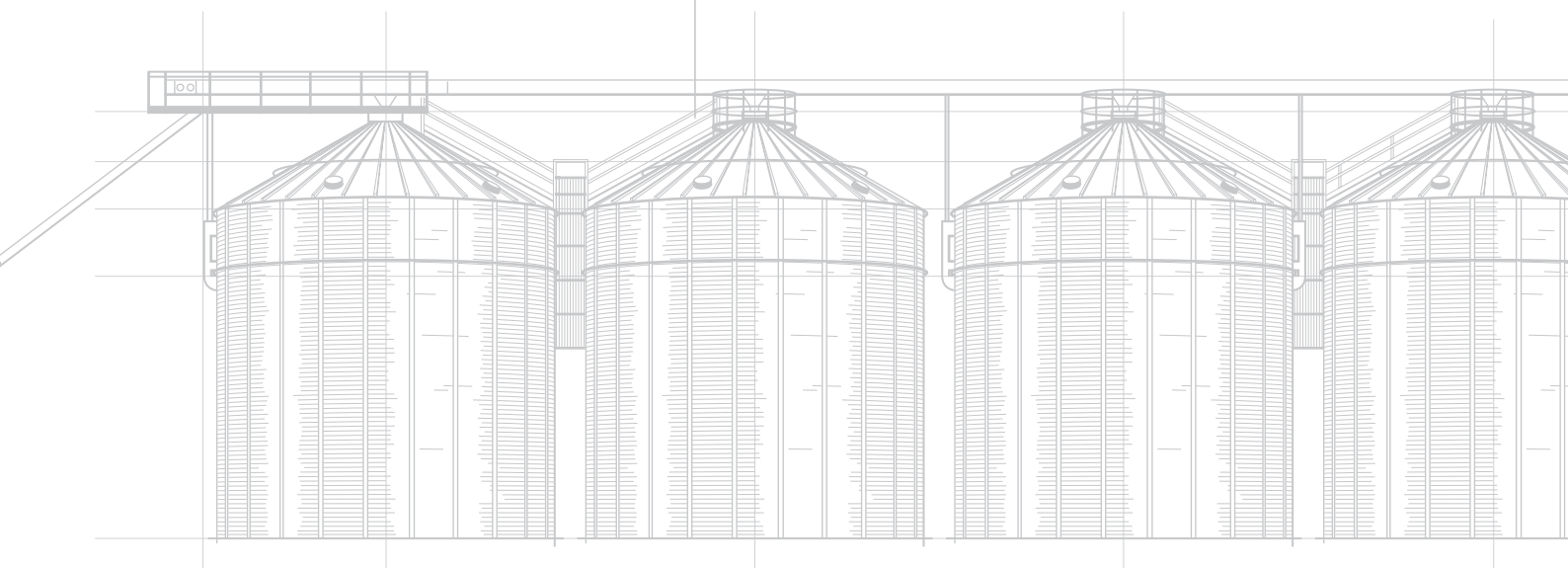
Available with two slope angles (30° or 45°) and adaptable under-cone heights, the aeration cone is designed to perfectly meet your needs depending on the type of grain stored.

Integration of the unloading system is facilitated by easy access under the bin, and mechanisation is kept to a minimum as there is no scraper auger.

FANS

With mobile fans ranging from 1.5 to 18.5 kW or fixed fans of all power ranges, all specifically developed for grain aeration, we can guarantee high-performance aeration.

Furthermore, depending on the needs calculated by our engineering department, you can rest assured of high electrical performance for kW/m³/h.



Hopper bins

This innovative and versatile concept can have various applications. It can be used for storage, as a bulk loading bin, as a transit unit or as a green silo for products awaiting drying.

The hopper bins can be equipped with aeration, temperature control, a vibrator, etc.

With total gravity unloading, the main advantage of the hopper bin is to reduce considerably the mechanics of low- or high-rate grain transfer.

Any fluid material can be stored in this type of bin: grains, pellets, woodchips, plastic balls, etc. GGS has experience in every industrial domain.

With its 100%-hot-dip galvanised structure, this standing frame design prevents any risk of water infiltrating between the compression ring and the support frame.

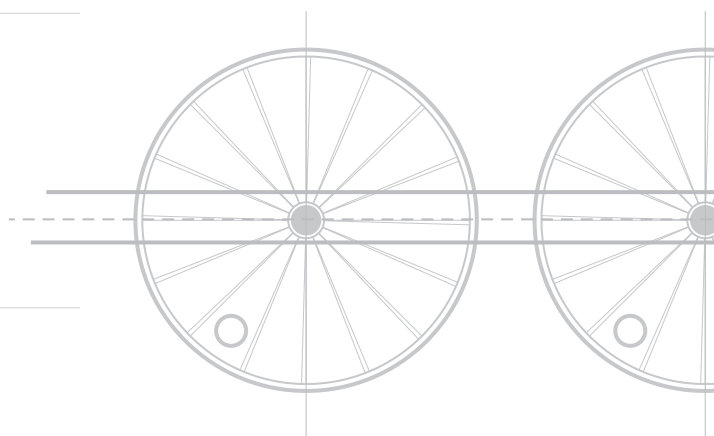
The hoppers, according to their height and volume, are fitted with a continuous welded compression ring, inside and out, giving them superior structural quality and simplifying assembly.

Depending on the seismic zone of the installation, specific calculations are made to determine the correct dimensions of the support frame and bracings.

The suspended cone is made of structural steel (S350 GD – Z600). It is joined to the silo body by means of mushroom-head bolts.

Benefits

- Capacity from 14 to 3,449 m³
- Galvanisation: 600g/m²
- 45°, 60° and 66° cone.
- Diameters from 3 to 12.23 m
- Gravity unloading
- Easily accessible under-cone system
- Above-ground system
- Adjustable under-cone height (raising possible)





	45°	60°	66°
Diameter (m)	3.00 - 12.23	4.60 - 6.10	3.00 - 3.50
Capacity (m3)	14 - 3,449	65 - 266	18 - 99
Total height (m)	4.24 - 29.88	8 - 14.34	5.66 - 14.19



Storage in indoor silos

GGs remains your partner for indoor storage, whether in hopper bins or flat-bottom bins.

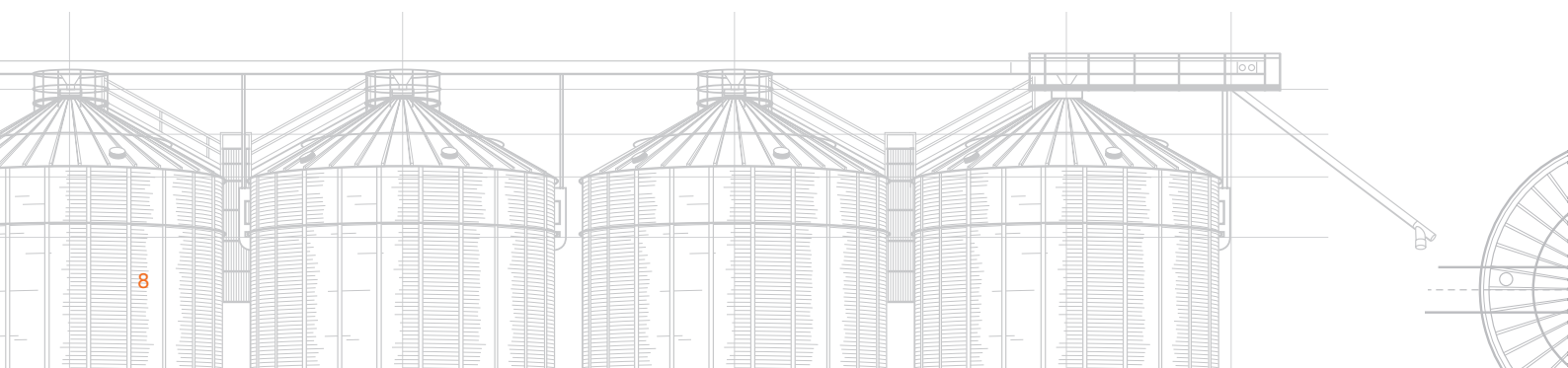
If you have an existing building that you wish to use for its storage capacity, our sales team will come out to you to analyse the constraints and offer you the solution best suited to your needs.

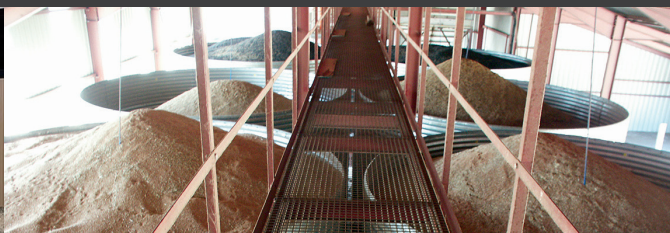
Our wide range of handling machines (augers, sweep conveyors, elevators, etc.) allows us to propose a global project.

This silo can be used inside a photovoltaic building to optimise investment thanks to the lowest-possible price per stored tonne.

Indoor flat-bottom bin specifications

- Z600 galvanisation (600g/m²)
- Fast assembly
- High-quality aeration
- Standard foundation bracket
- Magnelis roof
- Many options
- Simplified civil engineering





On-floor storage

Do you have a building that you would like to refurbish or make more multi-purpose?

GGs will advise you as to the best possible layout with column, half-moon or channel aeration, and a wide choice of handling possibilities for loading operations (mobile auger, chain conveyor, belt conveyor, etc.).





Temporary storage

Constant changes in storage constraints and fluctuations in the volumes to be managed force professionals to demonstrate increasing flexibility in terms of storage capacity, while optimising the cost of the stored tonne.

This temporary storage system is a supply chain tool that will increase storage capacities at little cost, while preserving the quality of the grain.

Simple and quick to install, and easily transportable as needed, it can be used as a storage unit in its own right or as an extra storage option.

It is also used extensively in North America for buffer storage. With tarp protection and grain aeration by means of a polypropylene tubing system, this process can preserve the grain's quality for storage periods of over one year (humidity <15%).

Thanks to the multiple configurations possible (round or oval) and its 3.05 m long modular panel sections, with heights varying from 1.2 to 2.7 m, this storage adapts perfectly to the outdoor space you have available to optimise storage.

Benefits

- 5,000 to 100,000 tonnes
- Only requires concrete/compacted flooring
- Simple to assemble/disassemble
- Variable wall height: 1.2-1.8 and 2.7 m
- Galvanised steel panels
- Reinforced polyethylene tarp
- Ø6mm polypropylene aeration network

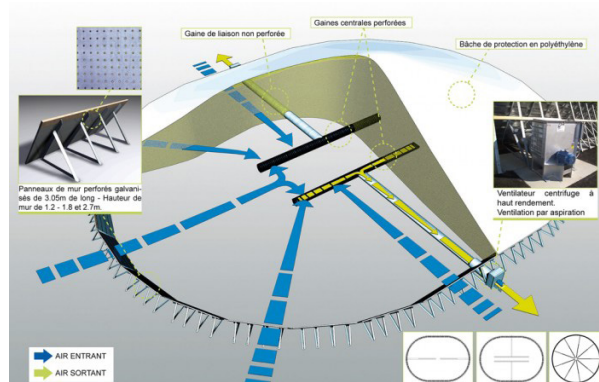
CHOICE OF FOUNDATION:

The ground on which the system rests can be simply compacted sand/gravel or a concrete slab.

Compacted ground is an economic alternative, but it involves a loss of grain for a height of several centimetres from the ground across the entire surface (so as to keep foreign bodies out of the grain).

The foundation that GGS advises in Europe is a concrete surface that enables transfer of practically all the grain and extends the system's service life.

Loading is done by a mobile auger, belt conveyor or high-throughput fixed handling (270 to 320 T/H). Unloading transfer is done by a front loader or fixed handling.



AERATION, STANDARD:

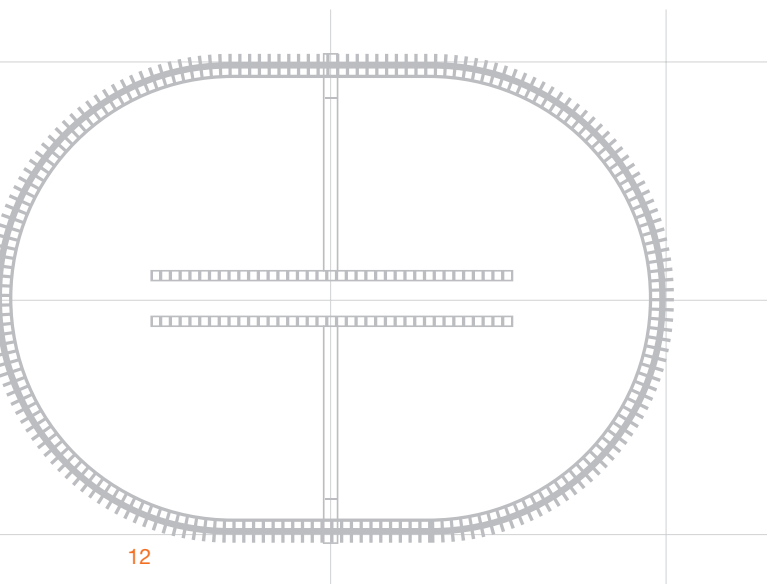
The dimensions of the fans that we supply for temporary storage are designed for an average air passage of 5m³/h per m³ of grain (or 6.25m³/h per tonne – wheat SW 0.75).

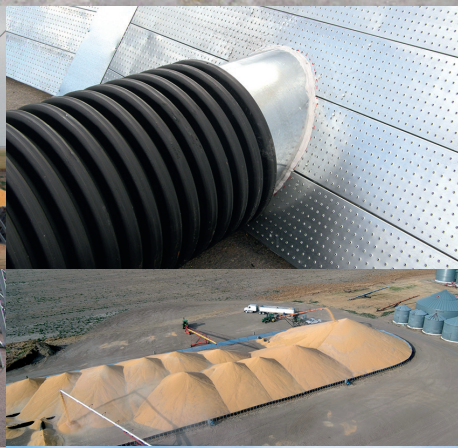
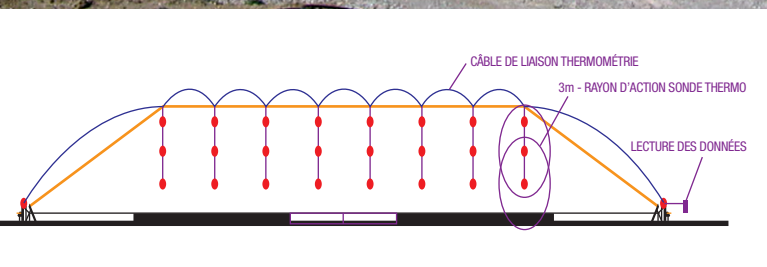
Should your needs differ, we can calculate the power required for your project.

Air intake is through perforated central ducts, and the wall panels, which are also perforated, allow air to pass through the walls, and then through the grain and the central ducts, to be expelled by the fan.

Only the ducts in the centre of the pile are perforated, so that the air taken in through the panel perforations penetrates right to the heart of the pile, and aeration is optimal.

This aeration is one of the system's keys, ensuring storage conditions equivalent to bin storage and far superior to on-floor storage.





To avoid any possible hotspots, it is possible to insert temperature control cables to verify the pile.



Bulk loading bins

Adding a bulk loading bin to your storage installation makes your supply chain all the more efficient.

A bulk loading bin allows you to optimise the rapid loading of trucks to less than five minutes. This way, as well as optimising your worktime, you can claim a "fast loading" bonus, depending on your buyer.

The square-round option lets you use your bulk loading bin for green buffer storage, with no grain retention.

Two ranges of bulk loading bin are available:

- galvanised as standard
- painted "to measure", according to the customer's specific request

As standard, the bulk loading bins have a hopper with four 45°-slope panels in galvanised steel plate. Unloading is done by means of a 300 x 300 mm penstock with manual control on the ground via nut wheel and chain.

The framework is galvanised, and has anchoring crosses and a belt in the top section of the posts.

Benefits

- From 31 to 137 m³
- 30° roof
- Under-cone height: 4.50 m
- 45° hopper

Options

- Ladder and roof access.
- Galvanised observation platform.
- Circuit disable switch, or with horn.
- Two or four-sensor weighing system.
- Side hatch.
- Square-round hopper.
- Automatic valve.

