

industrial silos

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RUSSIA, 58.244 m³





silos

**SYMAGA**
SILOS

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KEY FACTS

EXPERIENCE OF

35
YEARS

Backed by an **experience of 35 years and more than 42 million m³ of storage built worldwide**, Symaga ensures the optimal execution of any project. We have **performed projects in more than 145 countries**.

CONSTRUCTED
STORAGE42
M m³PRODUCTION
CAPACITY30
ROBOTSWORLD
LEADERSRELIABILITY
AND QUALITY

Symaga is a Spanish company specialized in designing, manufacturing and marketing galvanized steel silos for the storage of seeds, grains, malt, oilseeds, pellets, rice, and, in general, agriculture, agroindustry, bio-fuels and biomass.



The constant investment in updated technology has achieved the total automation, reaching **maximum quality standards**.

Integral traceability system has its own **quality control system**, allowing us to control all manufactured product at real-time. Furthermore, all machines count with **Computer Numerical Control**. Besides, Symaga obtained **CE certificate** in manufacturing process.

Our products are renowned for their durability and easy-assemble. Silos are manufactured in ondulated galvanized steel. Raw material used in the process is certified, with maximum quality, and European origin.

references in more than 145 countries

GERMANY 108,024 m³

R & D

MORE THAN

200

EMPLOYEES

MORE THAN

12.000 T

OF
GALVANIZED
STEEL IN
STOCK

Symaga has constantly invested in R & D. This innovating work is developed in conjunction with clients and suppliers, thereby improving our products and services and thus giving better value and efficiency to our customers.

Our Technical and Engineering Department, and After-sales Service Department, are always available for our customers: since the initial layout configuration until the assembly realization. Moreover, our multi-lingual Commercial Department facilitates communication.

Symaga features more than **12.000 tons of galvanized steel of average standing stock**, giving us the ability to deliver on the agreed date.

GENERAL
HISTORY

Symaga was founded in 1985 by Alfonso Garrido Muñoz, basing the business in manufacturing and marketing of farm silos and livestock equipment.

Symaga began in the heart of La Mancha, in Villarta de San Juan, in a small craft of 200 metres. Nowadays Symaga has a factory located on a plot of 400.000 sqm of land with **100.000 sqm of buildings**.

More than 90% export rate.

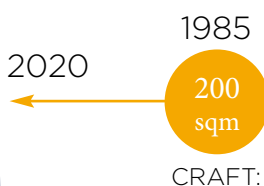
Symaga international presence has an exponential growth year after year. We are currently present in over **145 countries worldwide**.

PLOT OF LAND:

400.000 sqm

BUILDINGS:

100.000 sqm



THE COMPANY IS
STRUCTURED INTO:

3

DIVISIONS




founded in 1985



ROMANIA, 49.705 m³

Our products are recognized worldwide for their strength, durability, reliability and easy assembly. Silos are made of galvanized corrugated steel, with a **600 gr/m² coating**, ensuring a **double service life more than other suppliers**. All used material raw are certified and of the highest quality.



We also have a growing line of accessories and options allowing us to offer a product that completely meets your needs.

Our commitment to quality is not limited to the product, but to a technical and commercial service.

EXPERIENCE,
RELIABILITY
AND QUALITY



capacity of production

Several quality controls are applied to the material upon receipt and in all phases of the manufacturing process in order to allow us to ensure the quality until delivered.

Symaga has a quality management program to control its manufacturing process at real time.

All machines involved in production processes include CNC system, "Computer Numeric Control", to ensure accuracy and standardize the quality.



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MAIN REFERENCES

REFERENCES
IN MORE THAN

145

COUNTRIES

SPAIN 69.954 m³



SPAIN 20.241 m³



SPAIN 27.370 m³



LATIN AMERICA, SPAIN & PORTUGAL

GERMANY 12.248 m³



GERMANY 126.735 m³



SWITZERLAND 2.049 m³



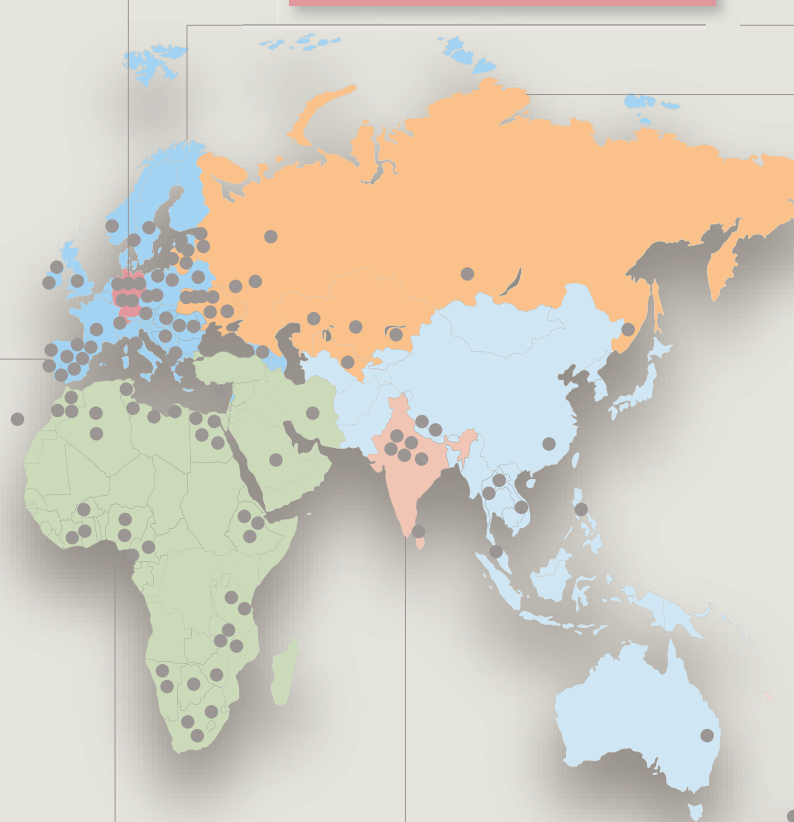
GERMANY 23.696 m³



GERMANY, AUSTRIA & SWITZERLAND



LATIN AMERICA, SPAIN & PORTUGAL



AFRICA & MIDDLE EAST



MEXICO 7.960 m³



MEXICO 9.683 m³



BOLIVIA 18.004 m³



SOUTH AFRICA 1.232 m³



ETHIOPIA 28.109 m³



EGYPTO 38.526 m³



COLOMBIA 28.965 m³



CHILE 52.316 m³



URUGUAY 35.643 m³



ARGENTINA 26.382 m³



IRAN 30.618 m³



LIBYA 9.672 m³



SAUDI ARABIA 77.172 m³

HUNGARY 3.343 m³**NORWAY** 11.529 m³**CZECH REP.** 15.128 m³**ROMANIA** 150.608 m³**SERBIA** 12.728 m³**SWEDEN** 13.497 m³**GREECE** 33.600 m³**CYPRUS** 1.110 m³**ITALY** 24.549 m³

EUROPE

CIS COUNTRIES

**RUSSIA** 58.244 m³**RUSSIA** 78.977 m³**RUSSIA** 13.616 m³**RUSSIA** 9.917 m³**RUSSIA** 28.878 m³**LATVIA** 79.168 m³**RUSSIA** 139.778 m³**RUSSIA** 55.975 m³**RUSSIA** 25.100 m³**KAZAJSTAN** 65.890 m³**KAZAJSTAN** 65.890 m³**UZBEKISTAN** 1.689 m³**UKRAINE** 704.887 m³**UKRAINE** 126.290 m³**UKRAINE** 212.220 m³**UKRAINE** 12.880 m³**UKRAINE** 316.386 m³**LITHUANIA** 39.096 m³

INDIA, NEPAL & SRI LANKA

**INDIA** 15.870 m³**INDIA** 57.402 m³**NEPAL** 6.426 m³**SRI LANKA** 6.952 m³

ASIA & OCEANIA

**INDONESIA** 101.900 m³**PHILIPPINES** 28.688 m³**MALAYSIA** 7.960 m³**NEW ZEALAND** 1.925 m³**KOREA** 12.945 m³**THAILAND** 55.004 m³**AUSTRALIA** 224 m³**VIETNAM** 5.888 m³

SYMAGA SILOS



The versatility of our products makes them available for **different industries** such as breweries, animal feed, port facilities, our mills, ethanol, drying, our mills, and storage of raw materials for the plastic industry and biofuels.

The growing product line allows us to offer a storage system that fully meets the needs of our customers by offering silos from **5 m³ to 25,000 m³ capacity**.

Symaga offers a wide range of silos that can be classied into the following types:



**FLAT BOTTOM SILOS
(OR WITH CONICAL
CONCRETE
FOUNDATION)**
FOR LONG
TERM STORAGE OF
LARGE QUANTITIES
OF GRAIN, SEEDS...



**SILOS WITH LOWER
STEEL HOPPER, WITH
45° OR 60° DEGREES**
DEPENDING ON THE
FLOWING OF THE
PRODUCT STORED.
DISCHARGE BY
GRAVITY



**HOPPER SILOS FOR
ELEVATED
STRUCTURE,**
UNLOADING TO
TRUCK OR TRAIN



INDOOR SILOS
DIAMETERS FROM
4.60 TO 12.23M,
MAXIMUM HEIGHT
11.45M



**MASS DISCHARGE
SILOS**



**SMALL CAPACITY
FEED SILOS
SUITABLE
FOR LIVESTOCK**

GERMANY, 23.696 m³

silos

 **SYMAGA**
SILOS

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GREECE, 33.600 m³



GERMANY, 91.300 m³COVERING
ROOFGALVANIZATION
ZM 310

• **30° degrees roof** to optimize storing capacity, and adapted to the natural slope of the grain.

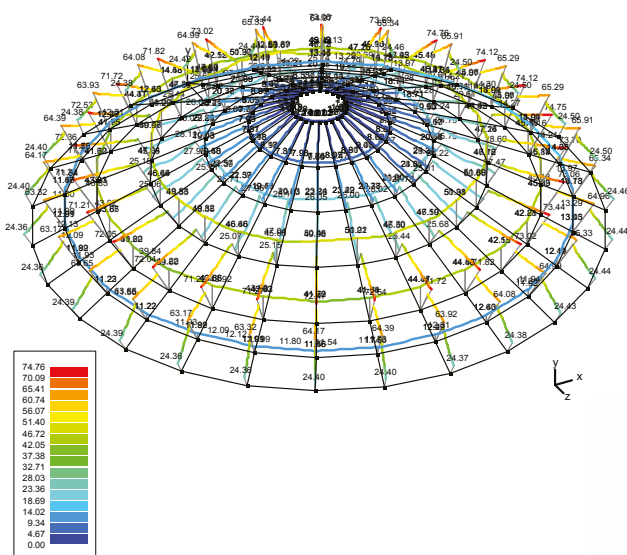
• **Supplied with or without structure** depending on the diameter of the silo and roof loads.

• **They are composed by trapezoidal sectors** of special conguration, which gives a better sealing and waterproof.

• **Roof has a special geometry**, due to the wave of the roof and longitudinal folds, which gives high strength and stiffness.

• **Different design depending of snow load** location of the installation.

• **Manufactured with structural steel**, with optimized special galvanized coating, ZM310, for best results in terms of resistance to corrosion (zinc, aluminum and magnesium).



CYLINDRICAL
BODY

GALVANIZATION
Z600

BODYSHEETS

STIFFENERS

Bodysheets:

- They are manufactured from a **structural steel S 350 GD Z600**.
- Our modern machinery guarantees perfect shaping of the bodysheets, avoiding assembling difficulties.
- Our bodysheet's pitch with 76 mm width and 14 mm depth improves and optimizes the perfect flowing of the grain as well as silo strength.



Stiffeners:

- Symaga uses **2 or 3 stiffeners per bodysheets**, depending on the silo model.
- Both bodysheets and stiffeners **are marked with its thickness and type of joint in each piece**, facilitating pieces identification, so that minimizing assembly mistakes.

HOPPER

GALVANIZATION
Z600LEGS AND
BRACESHOT DIP
GALVANIZATIONCOMPRESSION
RING

Hopper is made up of sector of structural **steel S 350 GD – Z600**, and can be performed with **45°, 60° or 66°** degrees, depending on the owing of the stored material.

Legs and bracing of our **structural steel silos are hot-dip galvanized**. Symaga has wide experience in the design of these critical elements, depending on the seismic zone in which the project will be performed.

From certain height and volume, our metal hopper silos have hot dip galvanized compression ring welded on both sides which gives the silo a **higher quality and faster structural assembly**.



BOLTING



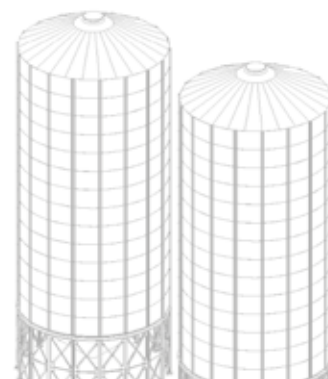
Quality 8.8 and 10.9 (ISO 898 -1:2009 and 898 - 2:2003). Supplied preassembled bolting is hot dip galvanized with a coating of 70-85 microns (UNE – EN ISO 10684:2006).

Nuts are of **category 8**.

Neoprene EPDM washers guarantee sealing.

BUTYL
RUBBER
COMPOUND

It is supplied in a preformed way to ensure optimal sealing.



INSPECTION
DOOR

Inspecting the content and condition of the grain and treatments.

WIND
RINGS

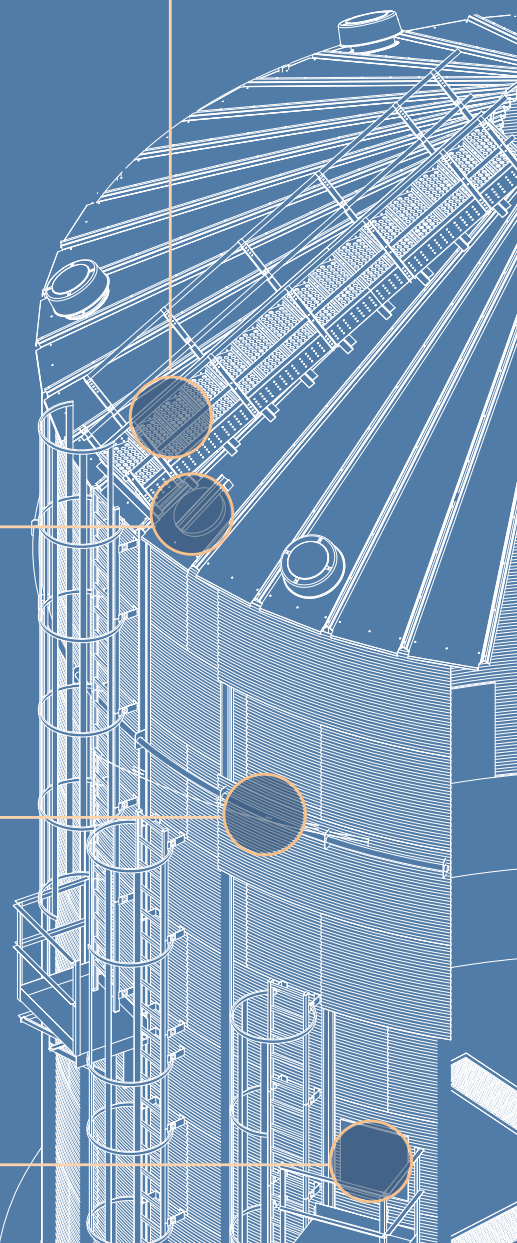
Are provided in order to resist the wind forces and to prevent deformation of the silo.

ACCESS
DOOR

Placed in the second ring. The bodysheet is supplied with the door already implemented.

ROOF
STEPS

Roof scale with universal rungs.



OPTIONAL ACCESORIES

LADDERS

• **With a safety ring and rest platforms**, handrails and non-slip steps. They are according to all current safety regulations. (UNE EN ISO 14122-1/2/3/4: 2002).

• **Galvanized**, increasing its service life of the tting. In addition, our ladders are modular, which speeds installation and allows greater flexibility.

MYANMAR, 38.840 m³



LADDER TO ROOF

To get the roof of the silo by climbing up the cylinder wall. With a safety cage and intermediate rest platforms, according to the UNE EN ISO 14222-1/2/3/4: 2002.



LADDER TO ACCESS DOOR

Includes a support platform.



ROOF STAIRWAY

Easy and safe access, with handrail roof ladder.



SPIRAL LADDER

Distributed spirally around the silo.



ZIGZAG STAIRS

We provide this stair in zigzag patterns facilitating the access to the top of the silo, to an elevator tower or to a work tower.



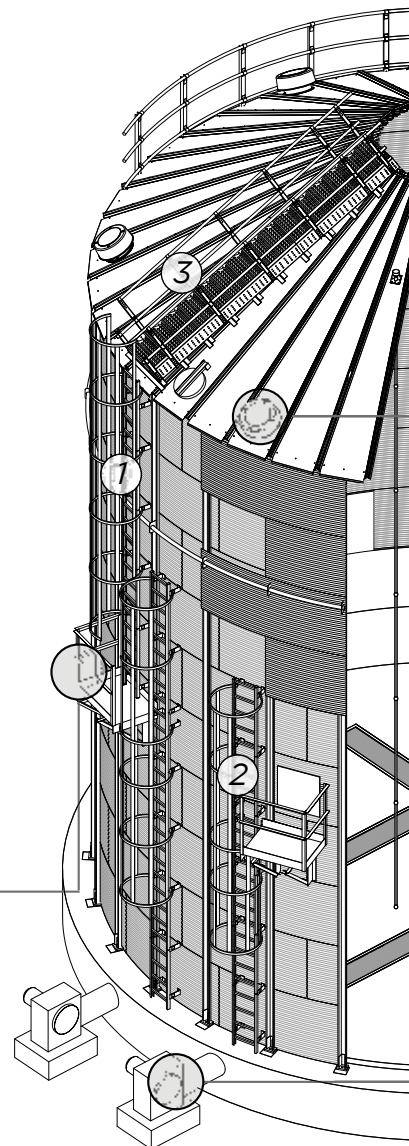
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INSIDE LADDER

a) It connects access door on the slope to the ground.

b) As an option, it may connect the inspection door to the ground.

REST PLATFORM



AERATION SYSTEM

ROOF VENT



- With circular design preventing the accumulation of water, snow and rubbish and opposes less air resistance.

- It is easy-assembly, embossed, perfect-sealed with the roof section, and it comes with anti-bird net.

- It is prepared with a special sealing system for fumigation, and ready for the installation of an exhaust fan coil to avoid condensation.

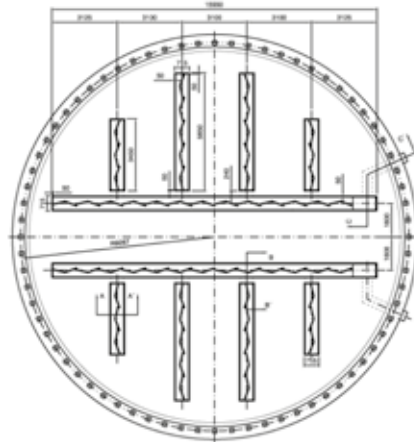
AERATION GUTTERS SYSTEM



Aeration channels

- Designed to cover **12.5%** of the total area of the base of the silo.

- They are made up of foundation channels that are covered with **special galvanized boxes, corrugated and multi-perforated of diameter 1 or 1.5 mm**. The channels may have shape of "Y" or "H", depending mainly on the volume of storing product.



EXTRACTOR FANS

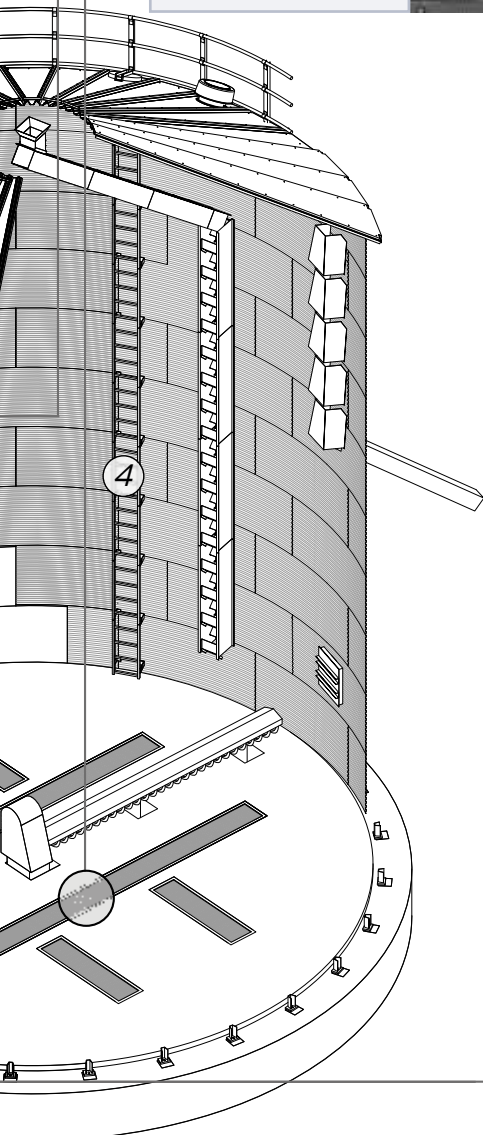


- **Helicoidal fan** on the roof as part of an aeration roof vent.

FANS



- **Available supply air fan, or exhaust fan.** IE3 certification, ensuring energy efficiency.



OPTIONALS ACCESORIES

AERATION SYSTEM

FULL PERFORATED FLOOR



The fully perforated floor is supported by a floor galvanized steel structure. Perforations are of a diameter of 1 or 1.5 mm, depending on the stored grain. Brackets are made of hot dip galvanized steel, which allows a better airflow and therefore a better ventilation.

PREFABRICATED GUTTERS



Gutters are installed in silo foundation. This element is manufactured in 3 mm thickness galvanized steel, depending on installation characteristics (size, width and depth of the silo and foundation, and the total volume of the stored grain). "Y", "H" and "C" types available.

HOPPER AERATION SYSTEM



Aeration channel system with drillings, fixed to a hopper sector and prepared for the connexion with the fan.

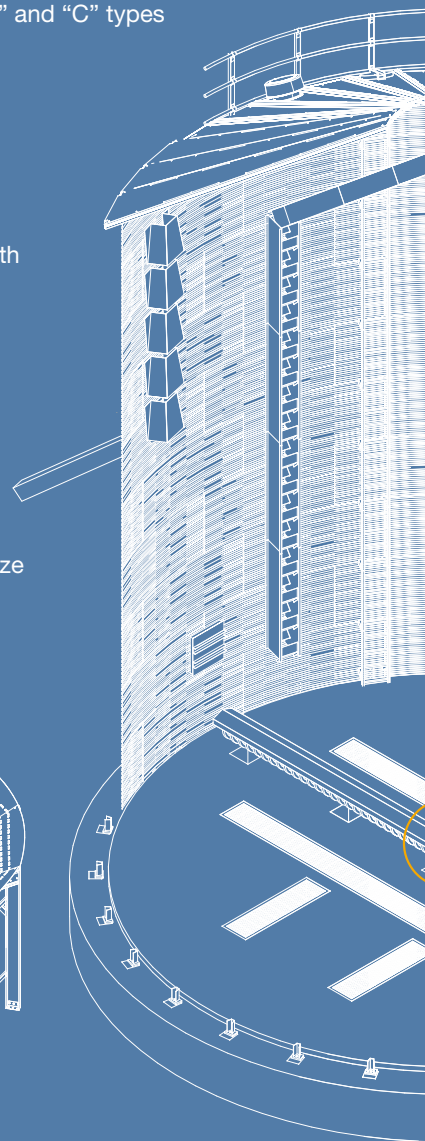
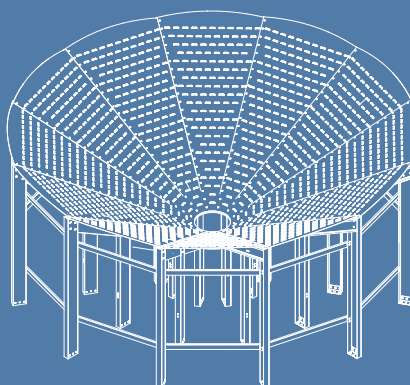
GRAIN CHILLER



Improve grain preservation, avoiding fumigation. Minimize weight loss. Allows cooling regardless of environmental conditions.

VENTILATED CONE

Elevated cone made of galvanized steel inside the silo. The system avoids contact between the ground and grain, making civil works cheaper.



ADDITIONAL SYSTEMS

TEMPERATURE MONITORING SYSTEM

Symaga offers 3 types of temperature control systems: Manual, Auto (centralized to a computer) and Portable (connected to a PDA).

Robust analog or digital sensors are offered, ensuring uninterrupted operation. It is a passive system which requires no maintenance.

The probes are supported on two beams, so their weight is not supported by roof sector. The probes can be replaced without emptying the silo.

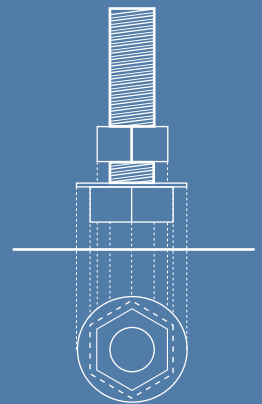
ATEX certified.

MAXIMUM AND MINIMUM LEVEL SENSORS

They are used to indicate when the silo is full, and when it is empty. They may be supplied rotating, capacitive or membrane type.

VENTING SYSTEM

Venting system is based on polyamide bolt-nut system in sector joints which gives rise to a venting anti-explosions surface according to EN 14491 2012 norm and anti-explosions ATEX norm.



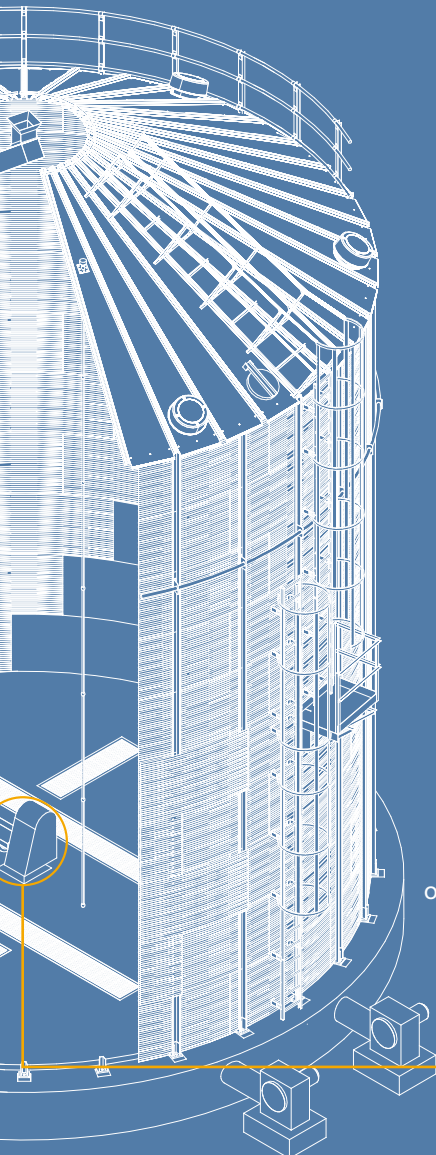
ERECTION TOOLS



Complete set of tools for silo mounting.

SWEEP AUGER

It is used to empty completely the flat bottom silo. Symaga offers industrial sweep augers with ATEX certification.



OPTIONAL ACCESORIES

ROOF



METALLIC EAVE SKIRT

Metallic eave skirt avoiding water and snow entrance, made in galvanized steel.



EAVE CATWALK

Perimetral catwalk around eave, allowing the path around the eave. Exterior and interior.



FOAM EAVE CLOSE

Symaga proposes a system for closing eave between silo cylinder and roof, to prevent water and snow entry into the silo and to guarantee the tightness of the silo. This eave close is made of FOAM.



ANTI-AVALANCHE

Galvanized rail on the roof avoiding snow avalanches.

EAVE HANDRAIL

It consists of a perimeter handrail and upper stiffeners support it. This item increases operator safety.



ROOF ACCESS DOOR

Entrance to the silo from roof.

ROOF HANDRAIL

Ensuring the transit from roof inlet until the inspection door.



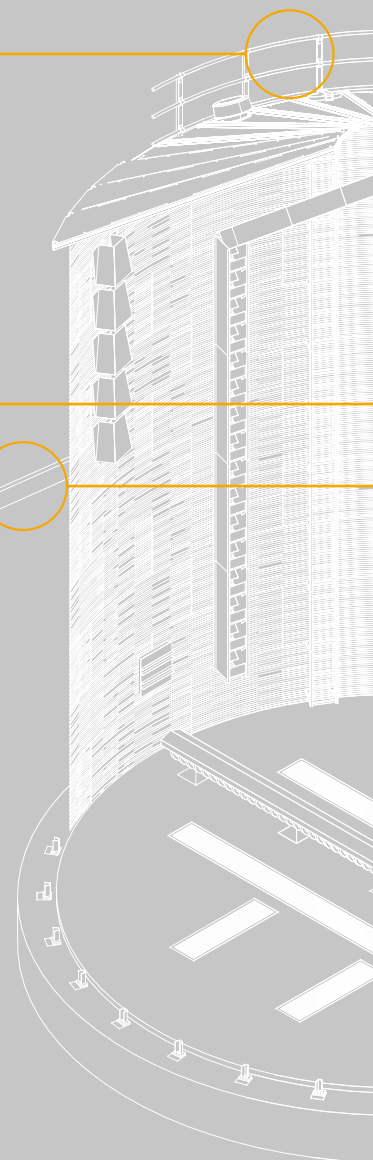
SEMI-AUTOMATIC GATE

Allow opening from the ground.



PNEUMATIC CHARGE FILLING

Channel system with charge and decompression pipe to fill the silos with air pressure.



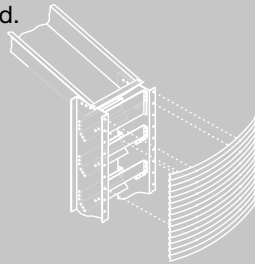
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OPTIONAL ACCESORIES

CYLINDER

GRAIN FALL SPEED REDUCER

This accessory avoid grain damage and breakage with deflector plates, as well grain disaggregation by weight or dust creation, thus minimizing explosion hazard.



SIDE DISCHARGE SYSTEM

It empties the silo down to 70% of the capacity without energy spending or maintenance. Unloading could be performed to truck, train or conveyor.

Double door for easier access into the silo. Placed in the first and second rings. The inner door is divided into 3 sections to avoid grain leak.

The inner flat sheets are a smooth lining to improve the flowing of the material and the cleanliness of the silo.

We provide standard, mechanical and chemical anchor bolts.

CLOSING ANGLE

Perimetral closing for silo with non-elevated inner slab.

silos

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Sizes 400x400 and 250x250. Different activation: manual, electric, pneumatic and double.

SLIDE GATE FOR HOPPER SILOS OUTLET



Allow the entry of machinery inside the silo. Anchor plate to the floor and reinforcements. Lock system included. Galvanized finishing.

ACCESS DOOR FOR HEAVY MACHINERY



DOUBLE BODYSHEET ACCESS DOOR



INNER FLAT LINING



ANCHORAGE SYSTEM



FOUNDATION SEALING

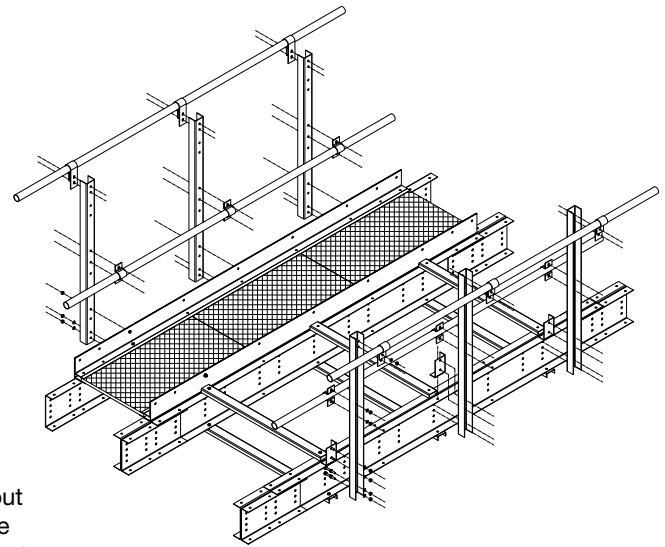


Butylic paint and compound sealing the foundation.

OPTIONAL ACCESORIES

SUPPLEMENTARY STRUCTURES

COLUMNS AND SUPPORTS



We design supports according to the load out conveyor, snow load and the diameter of the silos. Symaga engineers columns and supports according to installation configuration, according to UNE EN ISO 1993 norm.

CATWALKS

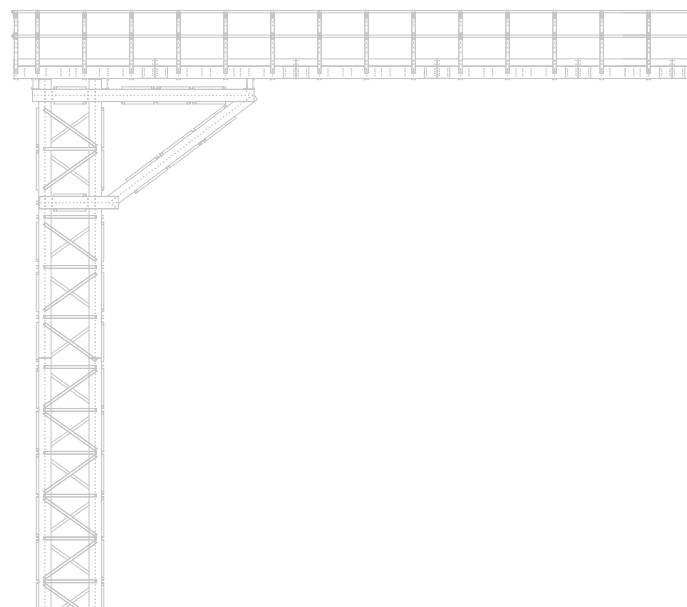


Our catwalks are modular, consequently adjustable to each project. Design is made according to UNE EN ISO 14122. Closed catwalk is available.

ROOF SUPPORT



Galvanized supports on silo dome for conveyor.



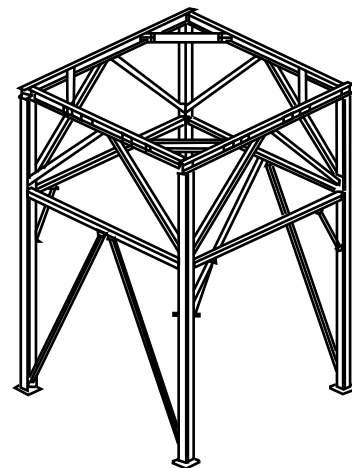
SUPPORT
STRUCTURE FOR
DELIVERY SILO



silos

SYMAGA
SILOS

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Support structure for delivery silo
with free total height of 5 metres for
truck or train transit.

REDLER SUPPORT



Hot dip galvanized conveyor supports, with
adjustable height.



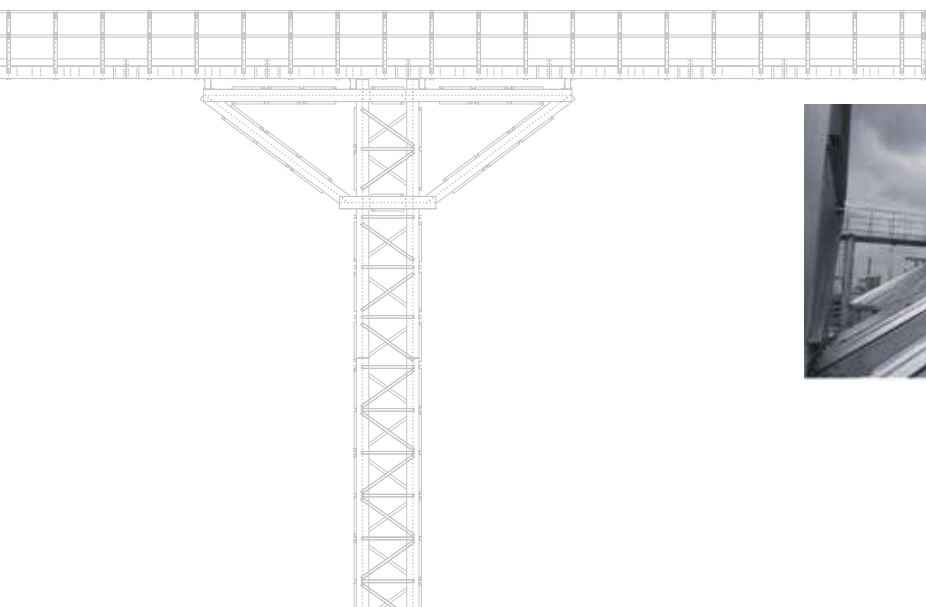
PLATFORM
BETWEEN
SILOS

To give access to the inspection door.



ELEVATOR
TOWER

Easy-access elevator tower.



MAINTENANCE
PLATFORM

Modular metallic structures of
700, 900 or 1100 mm. wide that
adapted to the installation to
ease the maintenance. Options
on standard or tramex floor.

OPTIONAL ACCESORIES

EXTERNAL FINISHES

SILO LINING



The outer lining adds extra protection against corrosion and provides extra insulation. It is available for roof, cylinder and hopper, in different colours (white, green and blue).



POWDER PAINTING

Coating with polyester resins. Minimum thickness applied 80 µm each side. Thickness and colour RAL on demand. Food use painting in option.

Roof galvanized steel S280GD+Z225 GS sector are previously pre-lacquered with 25/7 µm polyester. Available in white, green and blue.

PRE-LACQUERED ROOF

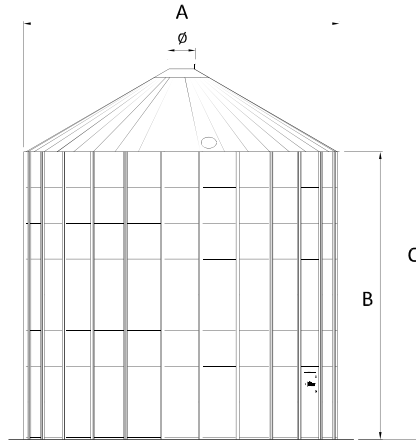


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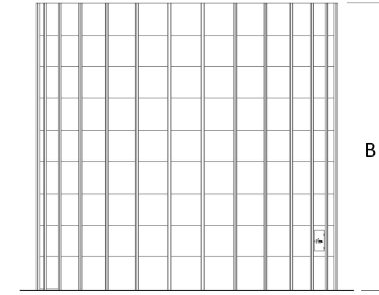
TECHNICAL
SHEET



FLAT BOTTOM SILOS




INDOOR SILOS



SBH - FLAT BOTTOM SILO - VOLUME

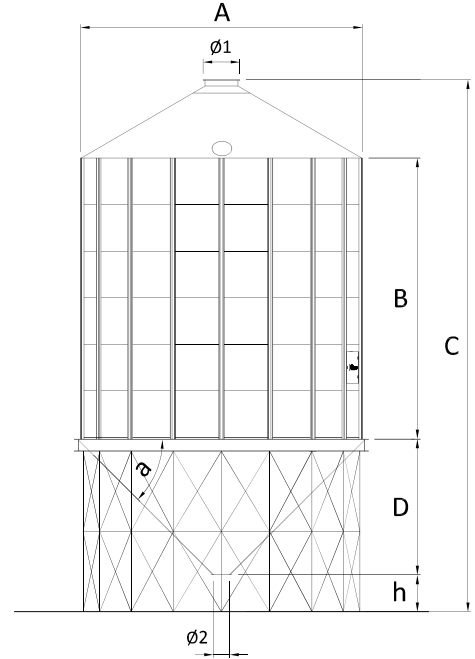
FLAT BOTTOM SILOS	SILO Ø (m) A	3,00	3,50	4,60	5,35	6,10	6,87	7,60	8,40	9,20	9,93	10,70	11,45	12,23	12,98	13,75	14,51	15,28	16,80	17,57	18,34	19,86	21,39	22,15	22,92	23,68	24,44	25,98	27,50	32,08
	ROOF HEIGHT (m) C-B	0,69	0,79	1,26	1,48	1,69	1,92	2,14	2,36	2,59	2,81	3,03	3,25	3,47	3,70	3,90	4,13	4,35	4,79	5,10	5,30	5,77	6,21	6,41	6,65	6,87	7,09	7,53	7,65	8,96
RINGS NUMBER	CYLINDRICAL HEIGHT (M) B	VOLUME (m³)																												
4	4,61	35	47	83	115	152	195	244	299	361	430	505	587	677	774	878	991	1.111	1.377	1.530	1.684	2.024	2.401	2.601	2.816	3.040	3.273	3.773	4.252	6.143
5	5,75	44	58	102	140	185	237	296	363	437	518	608	705	811	925	1.047	1.179	1.320	1.630	1.807	1.985	2.377	2.810	3.040	3.287	3.542	3.808	4.377	4.930	7.064
6	6,89	52	69	121	166	219	280	349	426	512	606	710	823	944	1.076	1.216	1.368	1.529	1.883	2.083	2.286	2.731	3.220	3.480	3.757	4.044	4.343	4.981	5.607	7.986
7	8,03	60	80	140	192	252	322	401	489	587	695	812	940	1.078	1.227	1.386	1.557	1.738	2.135	2.359	2.587	3.084	3.630	3.919	4.227	4.547	4.878	5.585	6.284	8.908
8	9,17	69	91	158	217	286	364	453	552	662	783	915	1.058	1.212	1.378	1.555	1.745	1.947	2.388	2.636	2.888	3.437	4.040	4.359	4.698	5.049	5.413	6.189	6.961	9.830
9	10,31	77	102	177	243	319	407	505	616	738	871	1.017	1.175	1.346	1.529	1.724	1.934	2.156	2.641	2.912	3.189	3.790	4.449	4.798	5.168	5.551	5.948	6.794	7.639	10.751
10	11,45	85	113	196	268	353	449	558	679	813	960	1.120	1.293	1.480	1.680	1.894	2.123	2.365	2.894	3.189	3.490	4.144	4.859	5.238	5.638	6.053	6.483	7.398	8.316	11.673
11	12,59	94	124	215	294	386	491	610	742	888	1.048	1.222	1.410	1.613	1.832	2.063	2.311	2.574	3.147	3.465	3.791	4.497	5.269	5.677	6.109	6.555	7.018	8.002	8.993	12.595
12	13,73	102	135	234	320	419	534	662	805	963	1.136	1.325	1.528	1.747	1.983	2.232	2.500	2.783	3.400	3.742	4.092	4.850	5.678	6.117	6.579	7.058	7.553	8.606	9.670	13.517
13	14,87	110	146	252	345	453	576	714	869	1.039	1.225	1.427	1.646	1.881	2.134	2.402	2.688	2.929	3.653	4.018	4.393	5.203	6.088	6.556	7.049	7.560	8.089	9.210	10.347	14.439
14	16,01	119	157	271	371	486	618	767	932	1.114	1.313	1.529	1.763	2.015	2.285	2.571	2.877	3.201	3.906	4.294	4.694	5.557	6.498	6.996	7.520	8.062	8.624	9.814	11.025	15.360
15	17,15	127	168	290	396	520	661	819	995	1.189	1.401	1.632	1.881	2.149	2.436	2.740	3.066	3.410	4.159	4.571	4.995	5.910	6.907	7.435	7.990	8.564	9.159	10.418	11.702	16.282
16	18,29	179	309	422	553	703	871	1.058	1.264	1.490	1.734	1.998	2.282	2.587	2.909	3.254	3.619	4.412	4.847	5.296	6.263	7.317	7.875	8.460	9.066	9.694	11.022	12.379	17.204	
17	19,43	190	328	448	587	745	923	1.122	1.340	1.578	1.837	2.116	2.416	2.738	3.079	3.443	3.828	4.665	5.124	5.597	6.616	7.727	8.314	8.931	9.569	10.229	11.626	13.056	18.126	
18	20,57	347	473	620	788	976	1.185	1.415	1.666	1.939	2.234	2.550	2.889	3.248	3.632	4.037	4.918	5.400	5.898	6.970	8.136	8.754	9.401	10.071	10.764	12.230	13.733	19.047		
19	21,71	365	499	654	830	1.028	1.248	1.490	1.755	2.042	2.351	2.684	3.040	3.417	3.820	4.246	5.170	5.677	6.199	7.323	8.546	9.193	9.871	10.573	11.299	12.834	14.411	19.969		
20	22,85	384	524	687	872	1.080	1.311	1.565	1.843	2.144	2.469	2.817	3.191	3.587	4.009	4.455	5.423	5.953	6.500	7.676	8.956	9.633	10.341	11.075	11.834	13.439	15.088	20.891		
21	23,99	403	550	720	915	1.133	1.374	1.641	1.931	2.246	2.586	2.951	3.342	3.756	4.198	4.664	5.676	6.230	6.801	8.029	9.366	10.072	10.812	11.577	12.370	14.043	15.765	21.813		
22	25,13	422	576	720	957	1.185	1.438	1.716	2.019	2.349	2.704	3.085	3.493	3.925	4.386	4.873	5.929	6.506	7.102	8.383	9.775	10.512	11.282	12.080	12.905	14.647	16.442	22.735		
23	26,27	441	601	787	999	1.237	1.501	1.791	2.108	2.451	2.822	3.219	3.644	4.095	4.575	5.082	6.182	6.782	7.403	8.736	10.185	10.951	11.752	12.582	13.440	15.251	17.119	23.656		
24	27,41	627	821	1.042	1.289	1.564	1.866	2.196	2.554	2.939	3.353	3.795	4.264	4.763	5.221	6.435	7.059	7.704	9.089	10.595	11.391	12.223	13.084	13.975	15.855	17.797	24.578			
25	28,55	653	854	1.084	1.342	1.627	1.942	2.284	2.656	3.057	3.486	3.946	4.433	4.952	5.500	6.688	7.335	8.005	9.442	11.004	11.830	12.693	13.586	14.510	16.459	18.474	25.500			
26	29,69	678	888	1.126	1.394	1.691	2.017	2.373	2.759	3.174	3.620	4.097	4.602	5.141	5.709	6.941	7.612	8.306	9.796	11.414	12.270	13.163	14.088	15.045	17.063	19.151				
27	30,83	921	1.169	1.446	1.754	2.092	2.461	2.861	3.292	3.754	4.248	4.772	5.329	5.918	7.194	7.888	8.607	10.149	11.824	12.709	13.634	14.590	15.580	17.667	19.828					
28	31,97	955	1.211	1.498	1.817	2.167	2.549	2.963	3.409	3.888	4.399	4.941	5.518	6.127	7.447	8.165	8.908	10.502	12.233	13.148	14.104	15.093								
29	33,11	988	1.253	1.551	1.880	2.243	2.638	3.066	3.527	4.022	4.550	5.110	5.707	6.336	7.700	8.441	9.209	10.855												
30	34,25	1.022	1.296	1.603	1.943	2.318	2.726	3.168	3.645	4.155	4.701	5.280	5.895	6.545	7.953	8.717														

Mass-Discharge Silos. Silo calculated according to NF-P-22-630 standard.

Indoor silos. Available with diameters ranging 3m to 12.23m, with the following SBI models: 3.00, 3.50, 4.60, 5.35, 6.10, 6.87, 7.60, 8.40, 9.20, 9.93, 10.7, 11.45 y 12.23. Maximum height for SBI is limited to 10 rings of body sheets, or 11.45m. SBI silos are marked in grey in technical data table. 

Silos capacity are calculated assuming a 27° angle of repose. Silos are designed to comply with wind loads of 100 kg / m² , snow loads of 80 kg / m² on the roof.

SILOS WITH HOPPER



SCE - T45 - 400 - VOLUME - h = 900 mm

HOPPER SILOS T-45	SILO Ø (m) A	4,60	5,35	6,10	6,87	7,60	8,40	9,20	9,93	10,70	11,45	12,23
	OUTPUT Ø2 (mm)	400	400	400	400	400	400	400	400	400	400	400
	HOPPER HEIGHT (m) D	2,18	2,57	2,54	3,33	3,72	4,11	4,48	4,86	5,36	5,74	6,12
	ROOF HEIGHT (m)	1,26	1,48	1,69	1,92	2,14	2,36	2,59	2,81	3,03	3,25	3,47
RINGS NUMBER	CYLINDRICAL HEIGHT (M) B	VOLUME (m³)										
4	4,61	95	134	180	236	300	375	459	554	665	784	915
5	5,75	114	159	214	278	353	438	534	643	767	901	1.049
6	6,89	133	185	247	321	405	501	610	731	869	1.019	1.183
7	8,03	151	211	281	363	457	565	685	819	972	1.136	1.316
8	9,17	170	236	314	405	509	628	760	908	1.074	1.254	1.450
9	10,31	189	262	348	448	562	691	835	996	1.177	1.371	1.584
10	11,45	208	287	381	490	614	754	911	1.084	1.279	1.489	1.718
11	12,59	227	311	414	532	666	817	986	1.173	1.382	1.607	1.852
12	13,73	245	339	448	575	719	881	1.061	1.261	1.484	1.724	1.985
13	14,87	264	364	481	617	771	944	1.136	1.349	1.586	1.842	2.119
14	16,01	283	390	515	659	823	1.007	1.212	1.438	1.689	1.959	2.253
15	17,15	302	415	548	702	875	1.070	1.287	1.526	1.791	2.077	2.387
16	18,29	321	441	582	744	928	1.134	1.362	1.614	1.894	2.195	2.521
17	19,43	340	467	615	786	980	1.197	1.437	1.703	1.996	2.312	2.654
18	20,57	358	492	649	829	1.032	1.260	1.513	1.791	2.099	2.430	2.788
19	21,71	377	518	682	871	1.084	1.323	1.588	1.879	2.201	2.547	2.922
20	22,85	396	543	716	913	1.137	1.387	1.663	1.968	2.304	2.665	3.056
21	23,99	415	569	749	956	1.189	1.450	1.738	2.056	2.406	2.783	3.190
22	25,13	434	595	789	998	1.241	1.513	1.814	2.144	2.508	2.900	3.323
23	26,27	452	620	816	1.040	1.293	1.576	1.889	2.233	2.611	3.018	3.457
24	27,41		646	849	1.083	1.346	1.640	1.964	2.321	2.713	3.135	3.591
25	28,55		671	883	1.125	1.398	1.703	2.040	2.409	2.816	3.253	3.725
26	29,69		697	916	1.167	1.450	1.766	2.115	2.492	2.918	3.370	3.858
27	30,83			950	1.210	1.502	1.829	2.190	2.586	3.021	3.488	3.992
28	31,97			983	1.252	1.555	1.892	2.265	2.674	3.125	3.606	4.126
29	33,11			1.017	1.294	1.607	1.956	2.341	2.762	3.225	3.723	4.260
30	34,25			1.050	1.337	1.659	2.019	2.416	2.851	3.228	3.841	4.394

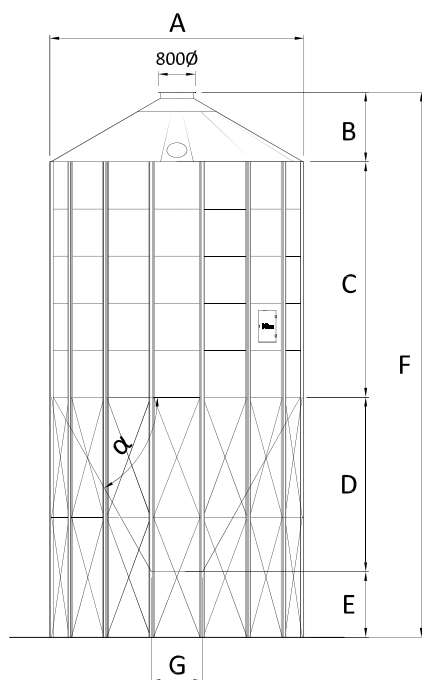
SCE - T60 - 1250 - VOLUME - h = 1650 mm

HOPPER SILOS T60	SILO Ø (m) A	4,60	5,35	6,10	6,87	7,60	8,40	9,20	9,93
	OUTPUT Ø2 (mm)	1250	1250	1250	1250	1250	1250	1250	1250
	HOPPER HEIGHT (m) D	2,98	3,62	4,28	4,93	5,63	6,30	6,96	7,62
	ROOF HEIGHT (m)	1,26	1,48	1,69	1,92	2,14	2,59	2,59	2,81
RINGS NUMBER	CYLINDRICAL HEIGHT (M) B	VOLUME (m³)							
4	4,61	99	142	193	256	330	415	514	626
5	5,75	118	167	227	298	382	479	589	714
6	6,89	137	193	260	340	434	542	664	802
7	8,03	156	218	294	383	486	605	739	891
8	9,17	175	244	327	425	539	668	815	979
9	10,31	193	270	361	467	591	732	890	1.067
10	11,45	212	295	394	510	643	795	965	1.156
11	12,59	231	321	428	552	695	858	1.040	1.244
12	13,73	250	346	461	594	748	921	1.116	1.332
13	14,87	269	372	494	637	800	985	1.191	1.421
14	16,01	287	398	528	679	852	1.048	1.266	1.509
15	17,15	306	423	561	721	905	1.111	1.342	1.597
16	18,29	325	449	595	764	957	1.174	1.417	1.686
17	19,43	344	474	628	806	1.009	1.237	1.492	1.774
18	20,57	363	500	662	848	1.061	1.301	1.567	1.862
19	21,71	382	526	695	891	1.114	1.364	1.643	1.951
20	22,85	400	551	729	933	1.166	1.427	1.718	2.039
21	23,99	419	577	762	975	1.218	1.490	1.793	2.127
22	25,13	438	603	796	1.018	1.270	1.554	1.868	2.216
23	26,27	457	628	829	1.060	1.323	1.617	1.944	2.304
24	27,41		654	862	1.102	1.375	1.680	2.019	2.392
25	28,55		679	896	1.145	1.427	1.743	2.094	2.480
26	29,69			705	929	1.187	1.479	2.169	2.569
27	30,83				963	1.229	1.532	2.245	2.657
28	31,97				996	1.272	1.584	2.320	2.745
29	33,11				1.030	1.314	1.636	2.395	2.834
30	34,25				1.063	1.356	1.688	2.470	2.922

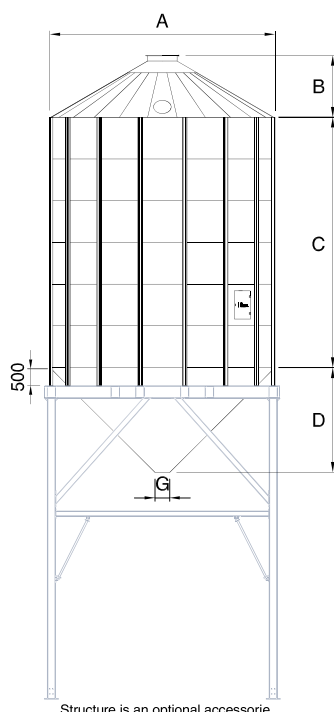
Mass-Discharge Silos. Silo calculated according to NF-P-22-630 standard.

Silos capacity are calculated assuming a 27° angle of repose. Silos are designed to comply with wind loads of 100 kg / m² , snow loads of 80 kg / m² on the roof.

SILOS WITH HOPPER NO RING



DELIVERY SILOS WITH HOPPER NO RING



SC - SCPC - T45 - 400 - VOLUME - E = 900

SILOS WITH HOPPER T45 NO RING	SILO Ø (m) A	3,00	3,50	4,60	5,35	6,10
	OUTPUT Ø (mm) G	400	400	400	400	400
	HOPPER HEIGHT (m) D	1,33	1,52	2,10	2,48	2,86
	ROOF HEIGHT (m) B	0,69	0,79	1,26	1,48	1,69
RINGS NUMBER	CYLINDRICAL HEIGHT (M) C	VOLUME (m)				
1	1,14	13	18	37	55	78
2	2,28	22	29	56	81	111
3	3,42	30	40	75	107	145
4	4,61	38	51	94	132	178
5	5,75	47	62	113	158	212
6	6,89	55	73	131	183	245
7	8,03	63	84	150	209	279
8	9,17	72	95	169	235	312
9	10,31	80	106	188	260	346
10	11,48	88	117	207	286	379

SC - SCPC - T60 - 1250 - VOLUME - E = 1650

SILOS WITH HOPPER T60 NO RING	SILO Ø (m) A	4,60	5,35	6,10
	OUTPUT Ø (mm) G	1250	1250	1250
	HOPPER HEIGHT (m) D	2,98	3,62	4,28
	ROOF HEIGHT (m) B	1,26	1,48	1,69
RINGS NUMBER	CYLINDRICAL HEIGHT (M) C	VOLUME (m)		
1	1,14	42	63	91
2	2,28	61	89	125
3	3,42	79	115	158
4	4,56	98	140	192
5	5,7	117	166	225
6	6,84	136	191	259
7	7,98	155	217	292
8	9,12	173	243	325
9	10,26	192	268	
10	11,40	211	294	

SC - SCPC - T66 - 1050 - VOLUME

SILOS WITH HOPPER T66 NO RING	SILO Ø (m)	3,00	3,50
	OUTPUT Ø (mm)	1050	1050
	HOPPER HEIGHT (m)	2,25	2,71
	ROOF HEIGHT (m)	0,69	0,79
RINGS NUMBER	CYLINDRICAL HEIGHT (M)	VOLUME (m)	
1	1,14	16	22
2	2,28	24	33
3	3,42	32	44
4	4,56	41	55
5	5,7	49	66
6	6,84	57	77
7	7,98	66	88
8	9,12	74	99
9	10,26	82	110
10	11,40	91	121

Mass-Discharge Silos. Silo calculated according to NF-P-22-630 standard.

Delivery silos. With capacities ranging from 27m³ until 267m³.

Silos capacity are calculated assuming a 27° angle of repose. Silos are designed to comply with wind loads of 100 kg / m² , snow loads of 80 kg / m² on the roof.



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