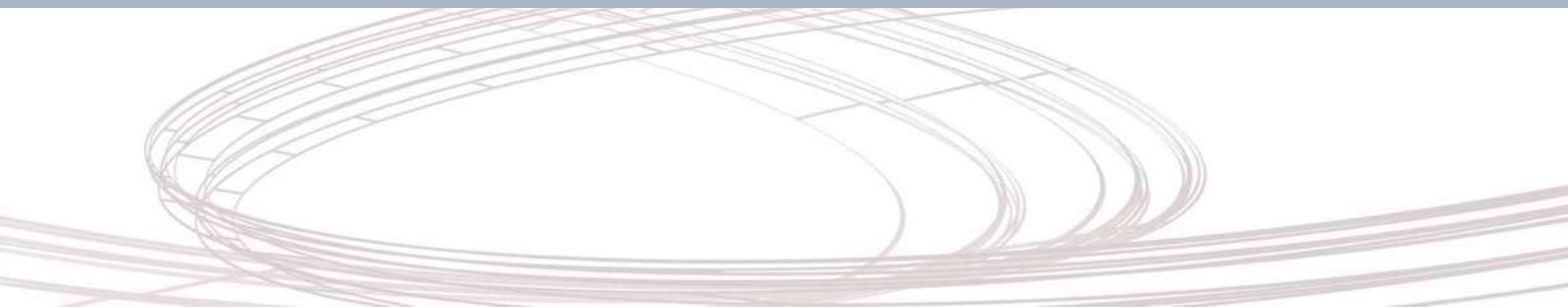


industrial silos



INDEX

01 KEY FACTS	02 GENERAL HISTORY	03 EXPERIENCE, RELIABILTY AND QUALITY	04 MAIN REFERENCES	05 SYMAGA SILOS
PAGE	PAGE	PAGE	PAGE	PAGE
04	06	08	10	12

RUSSIA, 58.244 m³



silos



06

COMPONENTS

07

OPTIONAL
ACCESORIES

08

TECHNICAL
SHEET

PAGE

14

PAGE

18

PAGE

27



01

KEY FACTS

EXPERIENCE OF
MORE THAN

35

YEARS

Backed by an **experience of more than 35 years and 50 million m³ of storage built worldwide**, Symaga ensures the optimal execution of any project. We have **performed projects in more than 145 countries**.

CONSTRUCTED
STORAGE

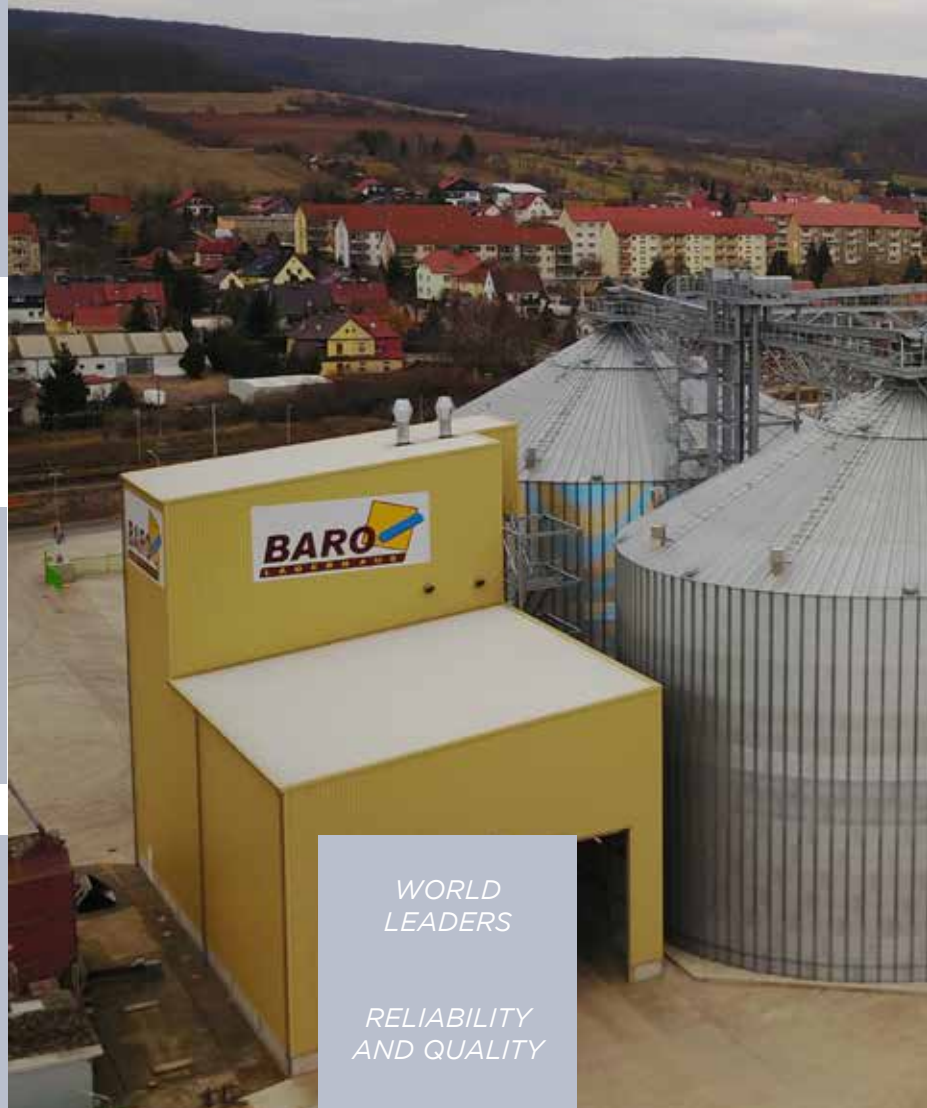
50

M m³PRODUCTION
CAPACITY

30

WORLD
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

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.

MORE THAN
200
EMPLOYEES

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

MORE THAN
12.000 T
OF
GALVANIZED
STEEL IN
STOCK

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.

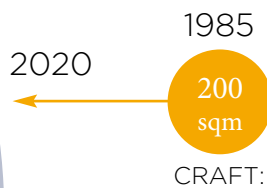
Symaga international presence has an exponential growth year after year. We are currently present in over **145 countries worldwide**.

PLOT OF LAND:

400.000 sqm

BUILDINGS:

100.000 sqm



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.



04

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



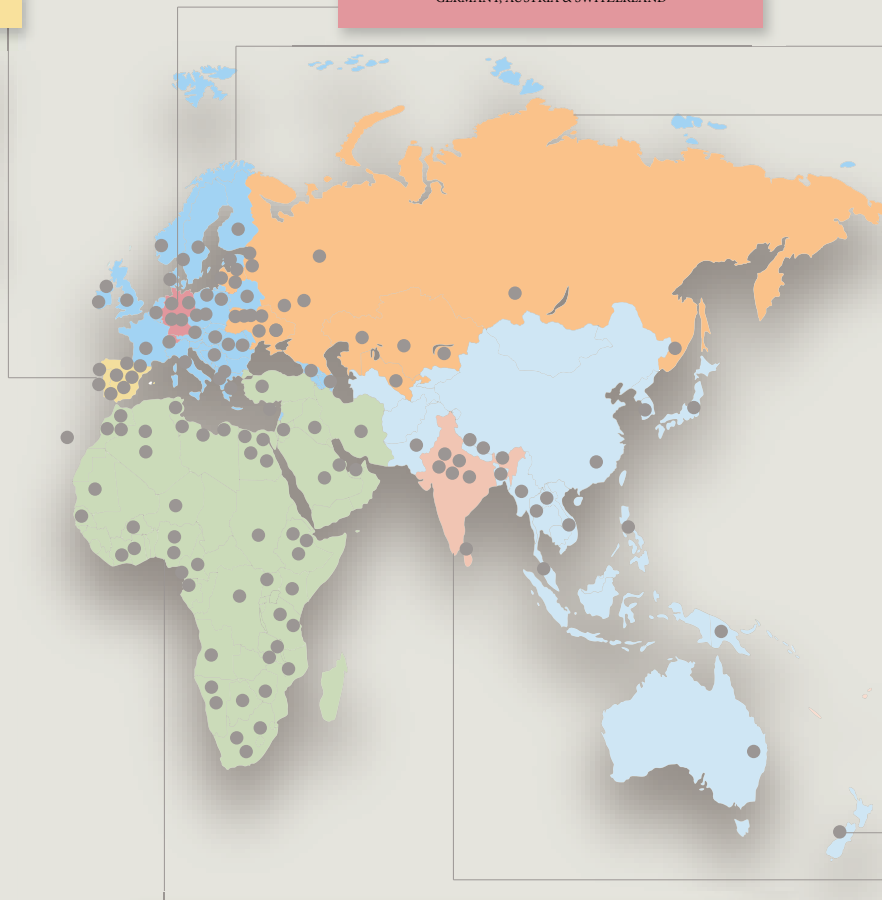
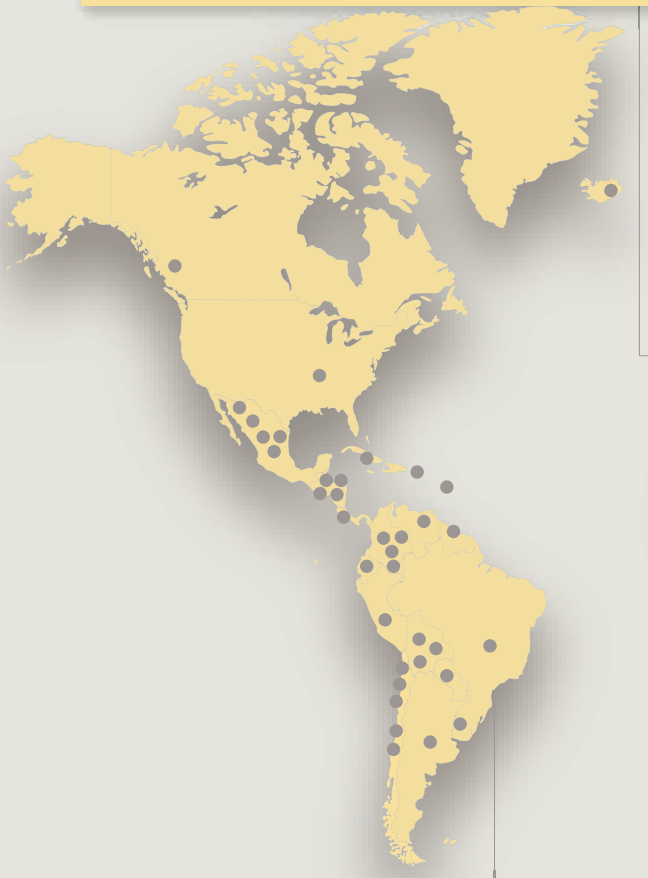
SWITZERLAND 2.049 m³



GERMANY 23.696 m³



GERMANY, AUSTRIA & SWITZERLAND



LATIN AMERICA, SPAIN & PORTUGAL



MEXICO 7.960 m³



MEXICO 9.683 m³



BOLIVIA 18.004 m³

AFRICA & MIDDLE EAST



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



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



GREECE, 33.600 m³



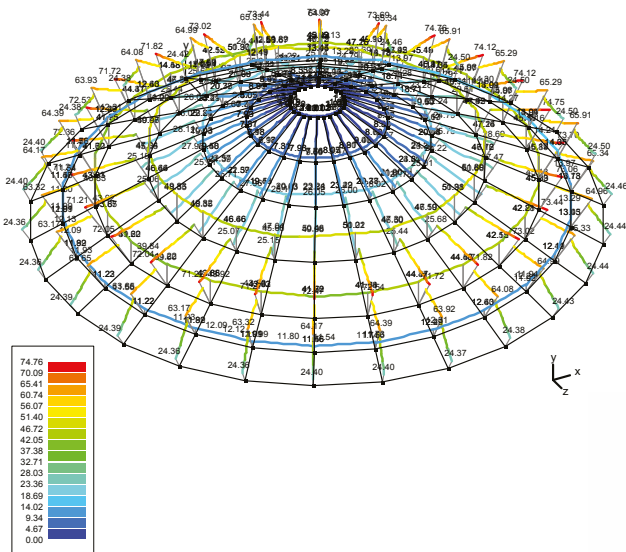


GERMANY, 91.300 m³

COVERING ROOF



- **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:

- 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.

BODYSHEETS



STIFFENERS



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

LEGS AND BRACES

HOT DIP

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.

COMPRESSION RING

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



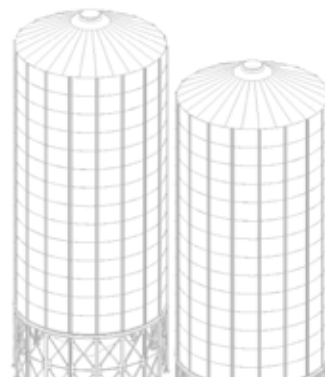
Quality 8.8 and 10.9 (ISO 898 -1:2009 and 898 - 2:2003). Supplied preassembled bolting is hot dip galvanized with a coating of 70-85 microns (UNE – EN ISO 10684:2006).

Nuts are of **category 8**.

Neoprene EPDM washers guarantee sealing.

BUTYL RUBBER COMPOUND

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



COMPONENTS

INSPECTION
DOOR



Inspecting the content and condition of the grain and treatments.



ROOF
STEPS

Roof scale with universal rungs.



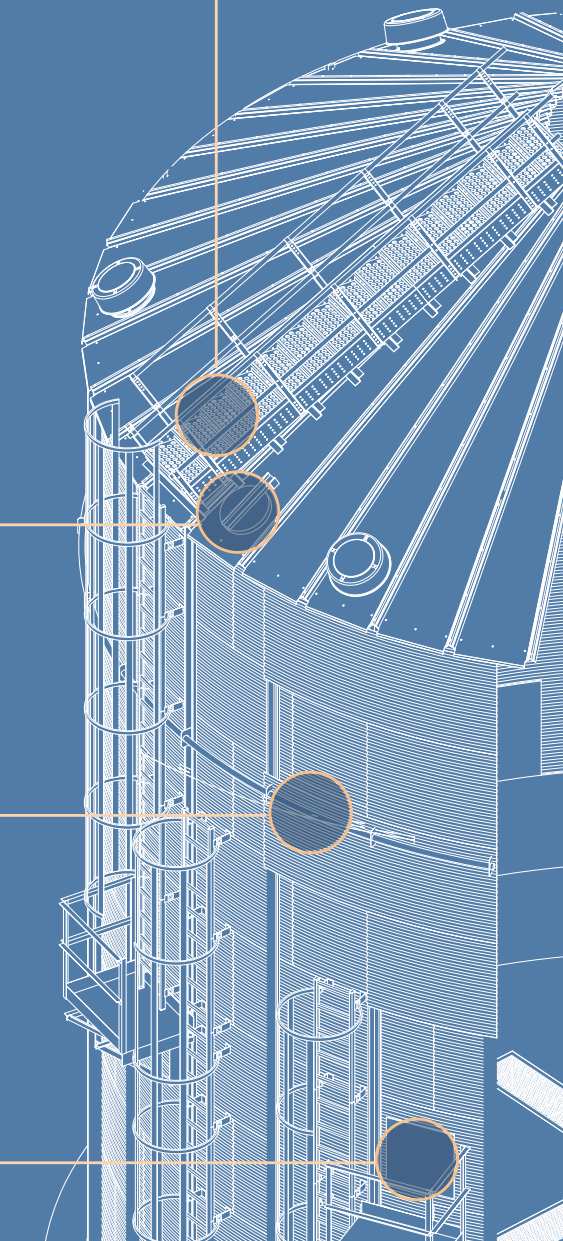
WIND
RINGS

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.



OPTIONAL
ACCESORIES

LADDERS

MYANMAR, 38.840 m³



• **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.



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 STAIRWAY

Distributed spirally around the silo.



ZIGZAG STAIRWAY

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.

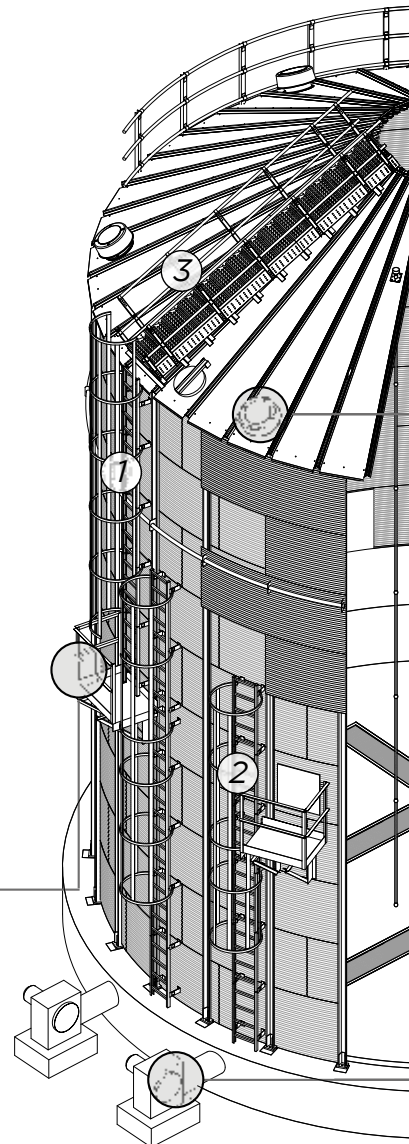


INSIDE LADDER

- 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.

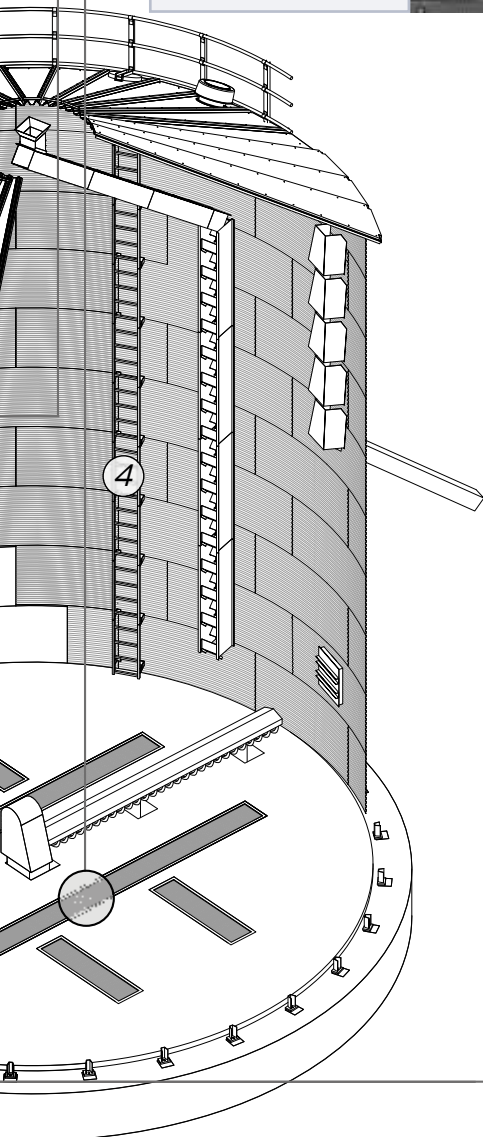
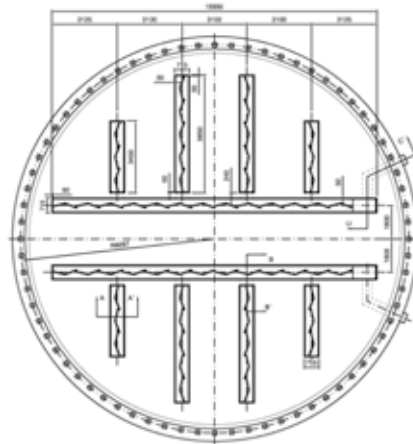
AERATION GUTTERS SYSTEM



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.

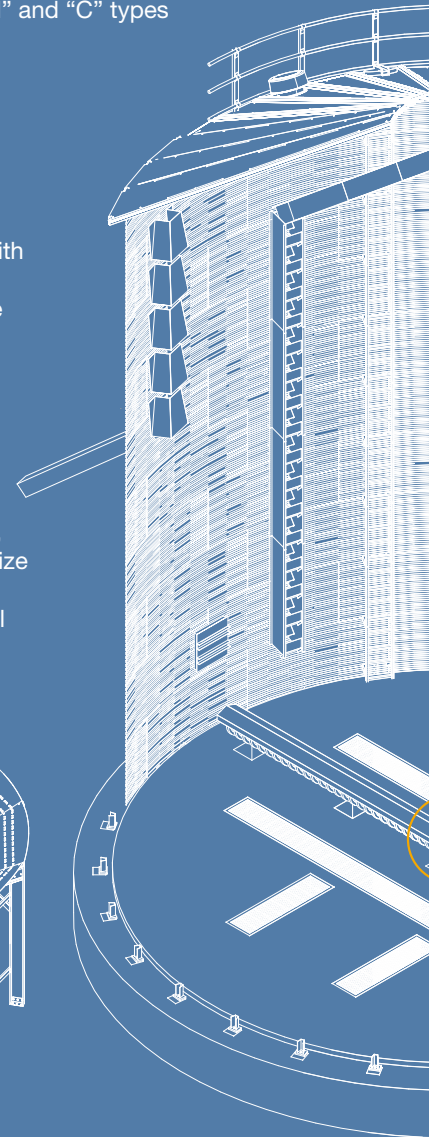
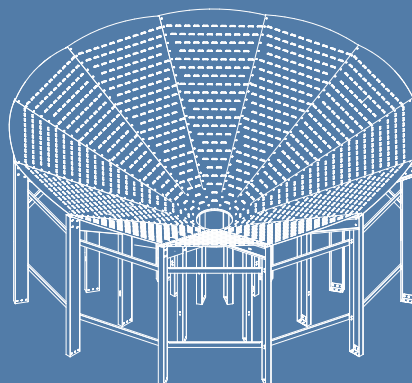
GRAIN
CHILLER



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

INSIDE
PERFORATED
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.

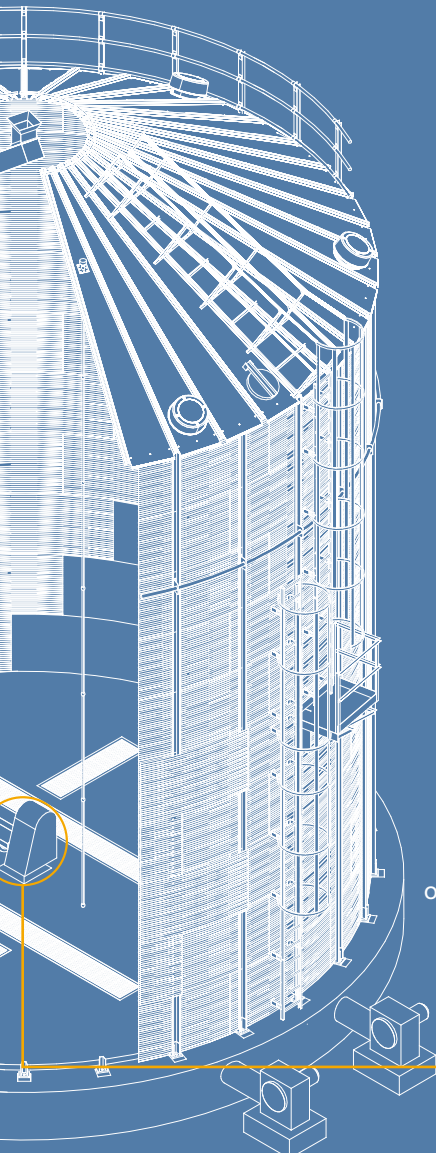
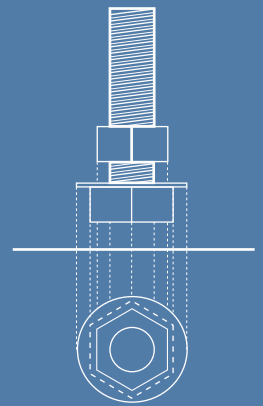
ATEX certified.

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.

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

SWEEP AUGER



07

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.



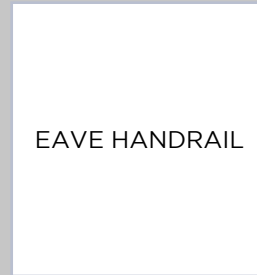
FOAM
EAVE CLOSE

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.



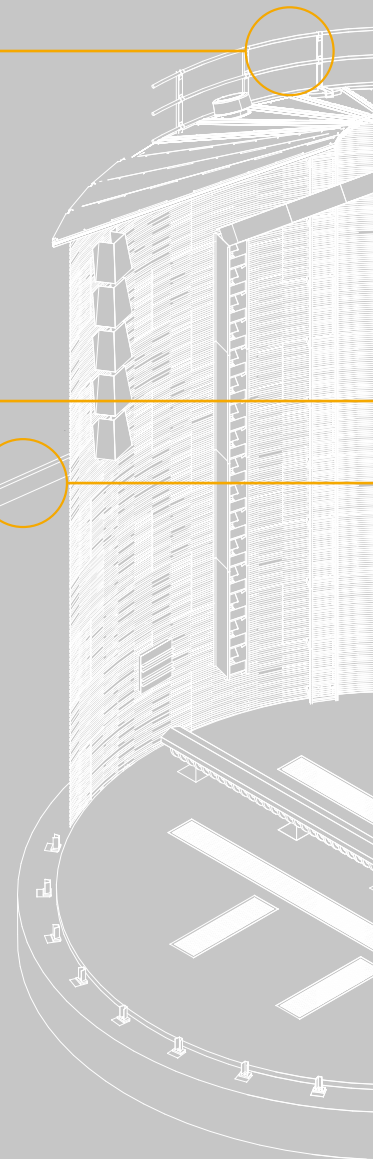
SEMI-AUTOMATIC
GATE

Allow opening from the ground.



PNEUMATIC
CHARGE
FILLING

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

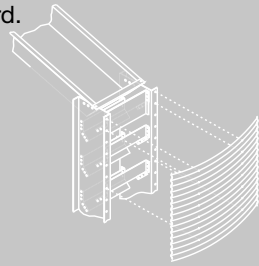


OPTIONAL
ACCESORIES

CYLINDER

GRAIN STOPPER
SYSTEM

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.

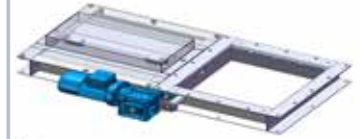
We provide standard, mechanical and chemical anchor bolts.

CLOSING ANGLE

Perimetral closing for silo with non-elevated inner slab.

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



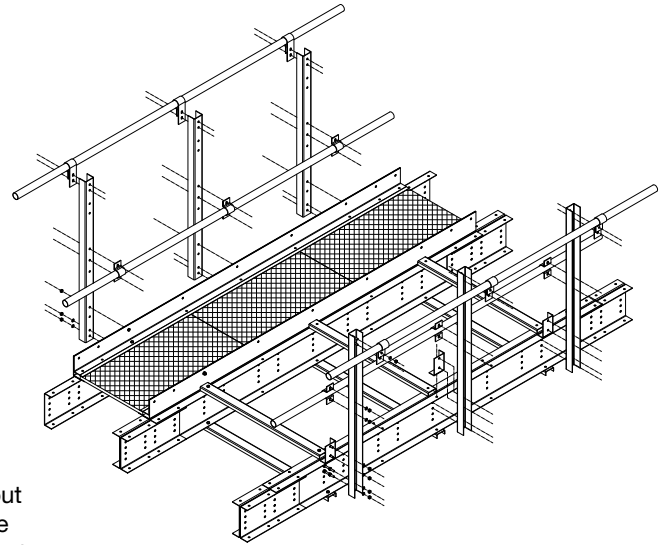
Butylic paint and compound sealing the foundation.

07

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

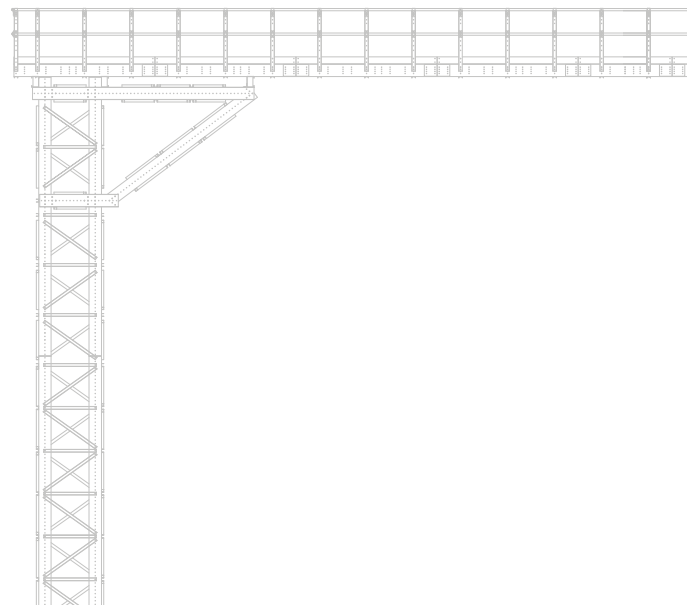


Our catwalks are modular, consequently adjustable to each project. Design is made according to UNE EN ISO 14122. Closed catwalk is available.

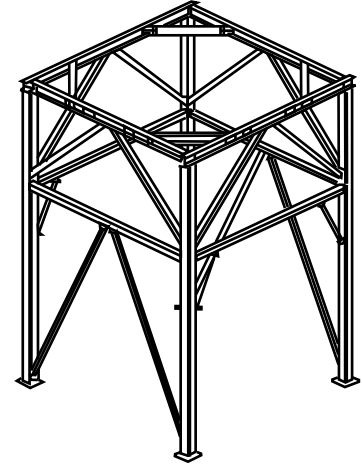
ROOF SUPPORT



Galvanized supports on silo dome for conveyor.



SUPPORT
STRUCTURE FOR
DELIVERY SILO



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

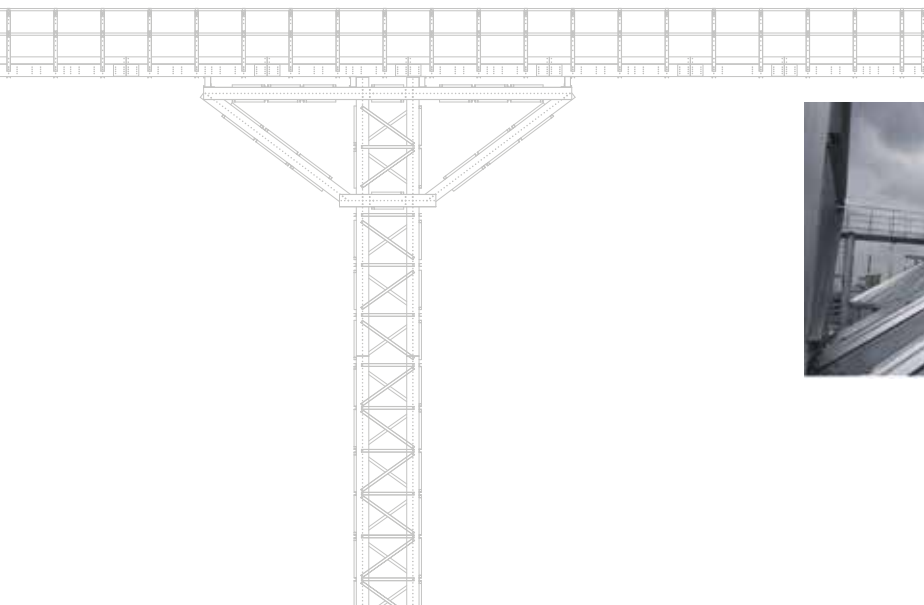


Easy-access elevator tower.

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.

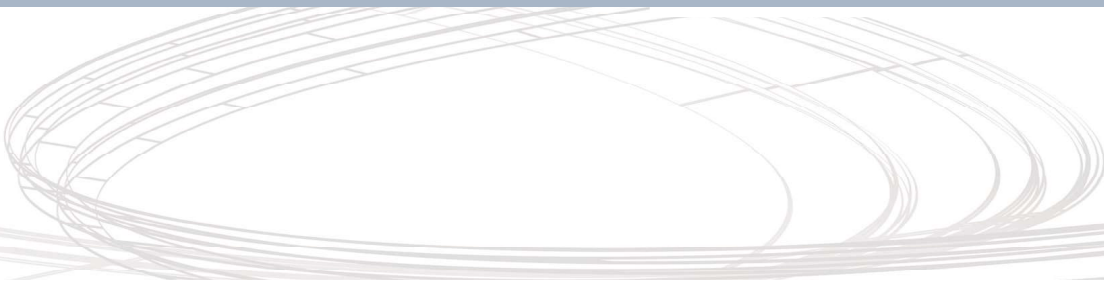
Roof galvanized steel S280GD+Z225 GS sector are previously pre-lacquered with 25/7 µm polyester. Available in white, green and blue.

PRE-LACQUERED
ROOF

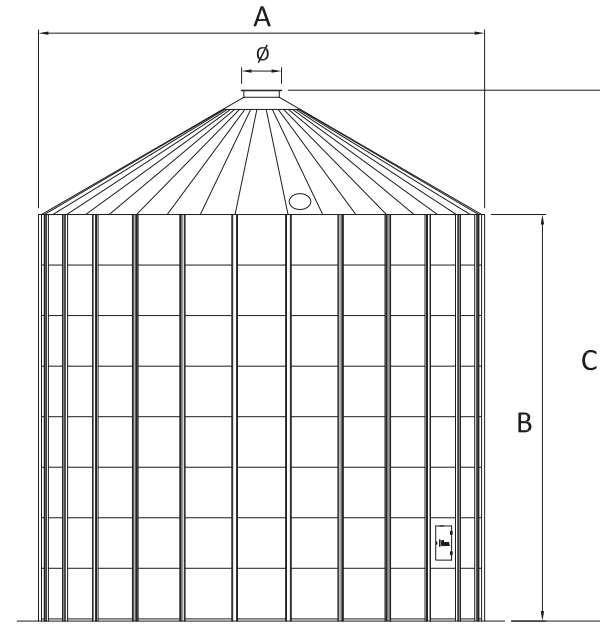


08

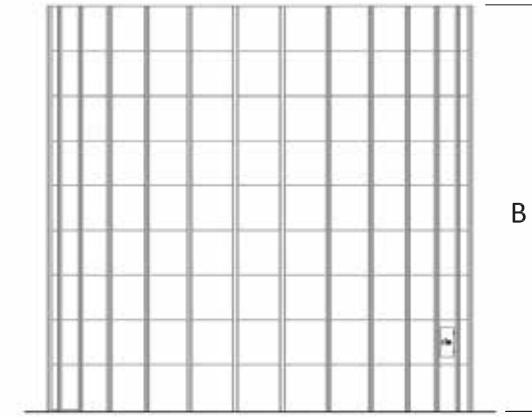
TECHNICAL
SHEET



FLAT BOTTOM
SILOS



INDOOR
SILOS

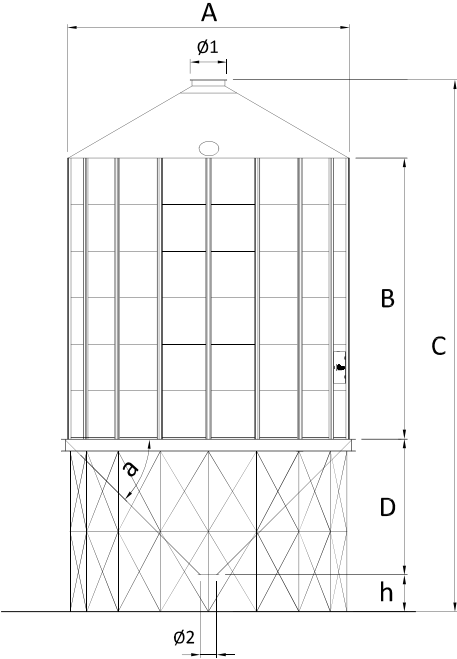


SBH - FLAT BOTTOM SILO - VOLUME

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	16,04	16,80	17,57	18,34	19,86	20,62	21,39	22,15	22,92	23,68	24,44	25,98	27,50	32,08					
	ALTURA DEL TECHO (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	4,56	4,79	5,10	5,30	5,77	5,99	6,21	6,41	6,65	6,87	7,09	7,53	7,65	8,96					
RINGS NUMBER	CYLINDRICAL HEIGHT (M) B	VOLUMEN (m³)																																			
4	4,61	35	47	83	115	152	195	244	299	361	430	505	587	677	774	878	991	1.111	1.229	1.377	1.530	1.684	2.024	2.206	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	1.459	1.630	1.807	1.985	2.377	2.587	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	1.689	1.883	2.083	2.286	2.731	2.968	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	1.920	2.135	2.359	2.587	3.084	3.348	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	2.150	2.388	2.636	2.888	3.437	3.729	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	2.380	2.641	2.912	3.189	3.790	4.110	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	2.611	2.894	3.189	3.490	4.144	4.490	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	2.841	3.147	3.465	3.791	4.497	4.871	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	3.071	3.400	3.742	4.092	4.850	5.252	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	3.302	3.653	4.018	4.393	5.203	5.632	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	3.532	3.906	4.294	4.694	5.557	6.013	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	3.763	4.159	4.571	4.995	5.910	6.394	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	3.993	4.412	4.847	5.296	6.263	6.775	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	4.223	4.665	5.124	5.597	6.616	7.155	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	4.454	4.918	5.400	5.898	6.970	7.536	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	4.684	5.170	5.677	6.199	7.323	7.917	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	4.914	5.423	5.953	6.500	7.676	8.297	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	5.145	5.676	6.230	6.801	8.029	8.678	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	5.375	5.929	6.506	7.102	8.383	9.059	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	5.605	6.182	6.782	7.403	8.736	9.439	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	5.836	6.435	7.059	7.704	9.089	9.820	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	6.066	6.688	7.335	8.005	9.442	10.201	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	6.296	6.941	7.612	8.306	9.796	10.581	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	6.527	7.194	7.888	8.607	10.149	10.962	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	6.757	7.447	8.165	8.908	10.502	11.343	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	6.988	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	7.218	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

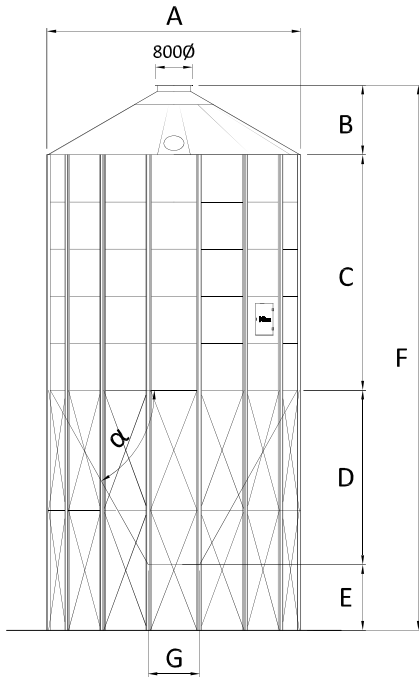
HOPPER SILOS T-45	SILO Ø (m) A	4,60	5,35	6,10	6,87	7,60	8,40	9,20	9,93	10,70	11,45	12,23
	OUTPUT Ø2 (mm)	400	400	400	400	400	400	400	400	400	400	400
	HOPPER HEIGHT (m) D	2,18	2,57	2,54	3,33	3,72	4,11	4,48	4,86	5,36	5,74	6,12
	ROOF HEIGHT (m)	1,26	1,48	1,69	1,92	2,14	2,36	2,59	2,81	3,03	3,25	3,47
RINGS 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	1049
6	6,89	133	185	247	321	405	501	610	731	869	1019	1183
7	8,03	151	211	281	363	457	565	685	819	972	1136	1316
8	9,17	170	236	314	405	509	628	760	908	1074	1254	1450
9	10,31	189	262	348	448	562	691	835	996	1177	1371	1584
10	11,45	208	287	381	490	614	754	911	1084	1279	1489	1718
11	12,59	227	311	414	532	666	817	986	1173	1382	1607	1852
12	13,73	245	339	448	575	719	881	1061	1261	1484	1724	1985
13	14,87	264	364	481	617	771	944	1136	1349	1586	1842	2.119
14	16,01	283	390	515	659	823	1007	1212	1438	1689	1959	2.253
15	17,15	302	415	548	702	875	1070	1287	1526	1791	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

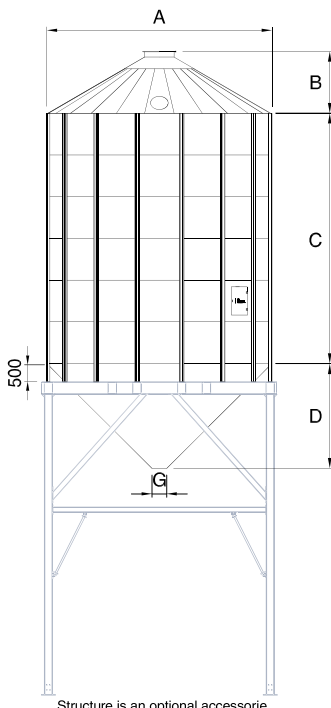
HOPPER SILOS T60	SILO Ø (m) A	4,60	5,35	6,10	6,87	7,60	8,40	9,20	9,93	
	OUTPUT Ø2 (mm)	1250	1250	1250	1250	1250	1250	1250	1250	
	HOPPER HEIGHT (m) D	2,98	3,62	4,28	4,93	5,63	6,30	6,96	7,62	
	ROOF HEIGHT (m)	1,26	1,48	1,69	1,92	2,14	2,36	2,59	2,81	
RINGS NUMBER	CYLINDRICAL HEIGHT (M) B	VOLUME (m³)								
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	1.807	2.169	2.569
27	30,83				963	1.229	1.532	1.870	2.245	2.657
28	31,97				996	1.272	1.584	1.933	2.320	2.745
29	33,11				1.030	1.314	1.636	1.996	2.395	2.834
30	34,25				1.063	1.356	1.688	2.060	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



Structure is an optional accessory

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 ³)				
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 ³)		
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 ³)	
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.



Offices and factory:

Ctra. de Arenas km. 2.300
13210 Villarta de San Juan • Ciudad Real - Spain
T: +34 926 640 475 • F: +34 926 640 294

Madrid office:

C/ Azcona, 37 • 28028 Madrid - Spain
T: +34 91 726 43 04 • F: +34 91 361 15 94

symaga@symaga.com
www.symaga.com