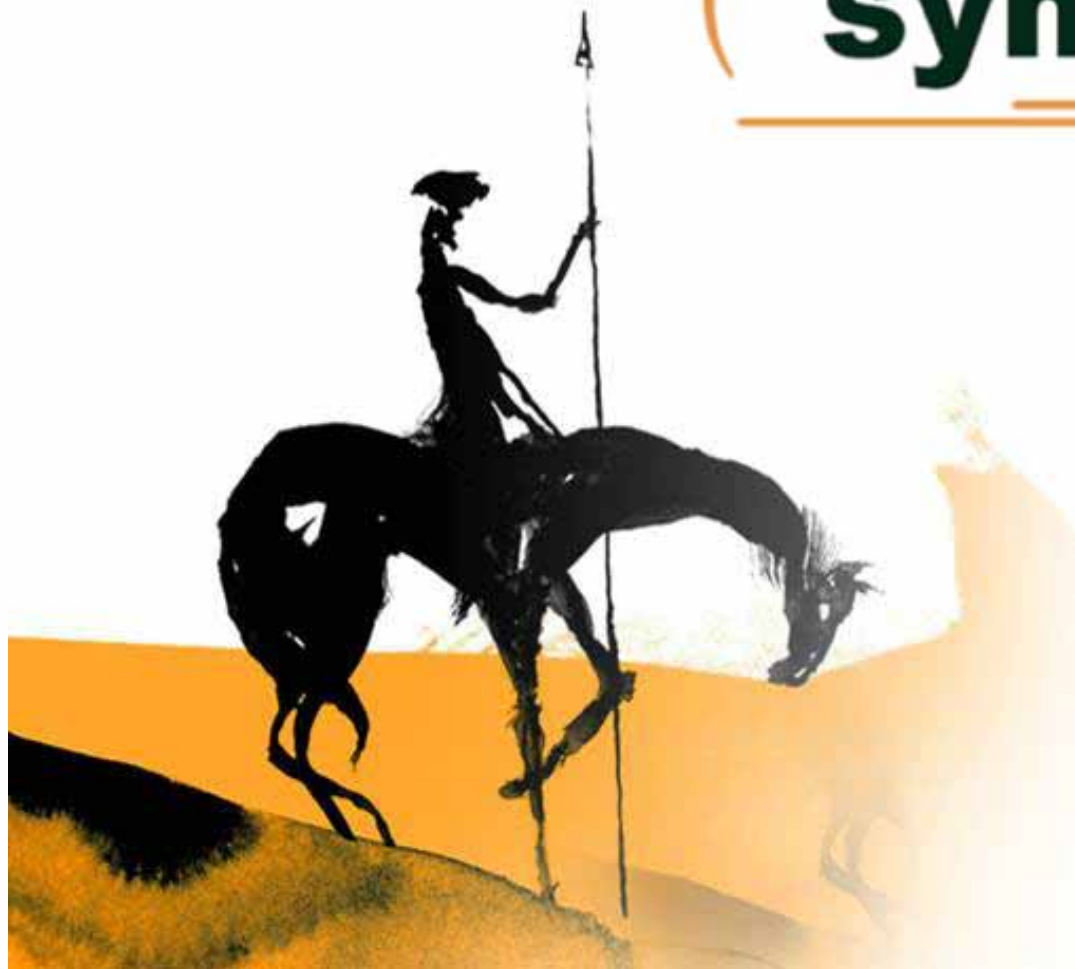




Made in La Mancha



[www.symaga.com](http://www.symaga.com)



# Our Company

- Established in 1985 by an expert group of professionals in the agricultural sector.

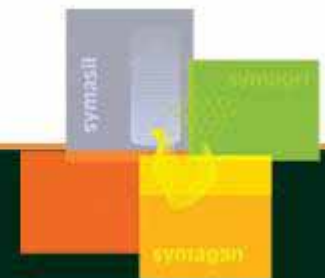
We focus on the manufacturing of

- SILOS for FEED and GRAIN storage
- LIVESTOCK equipments
- AGRICULTURE equipments

symasil

symagan

symagri

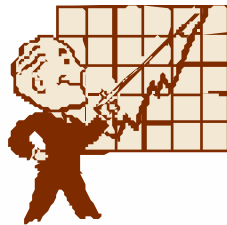
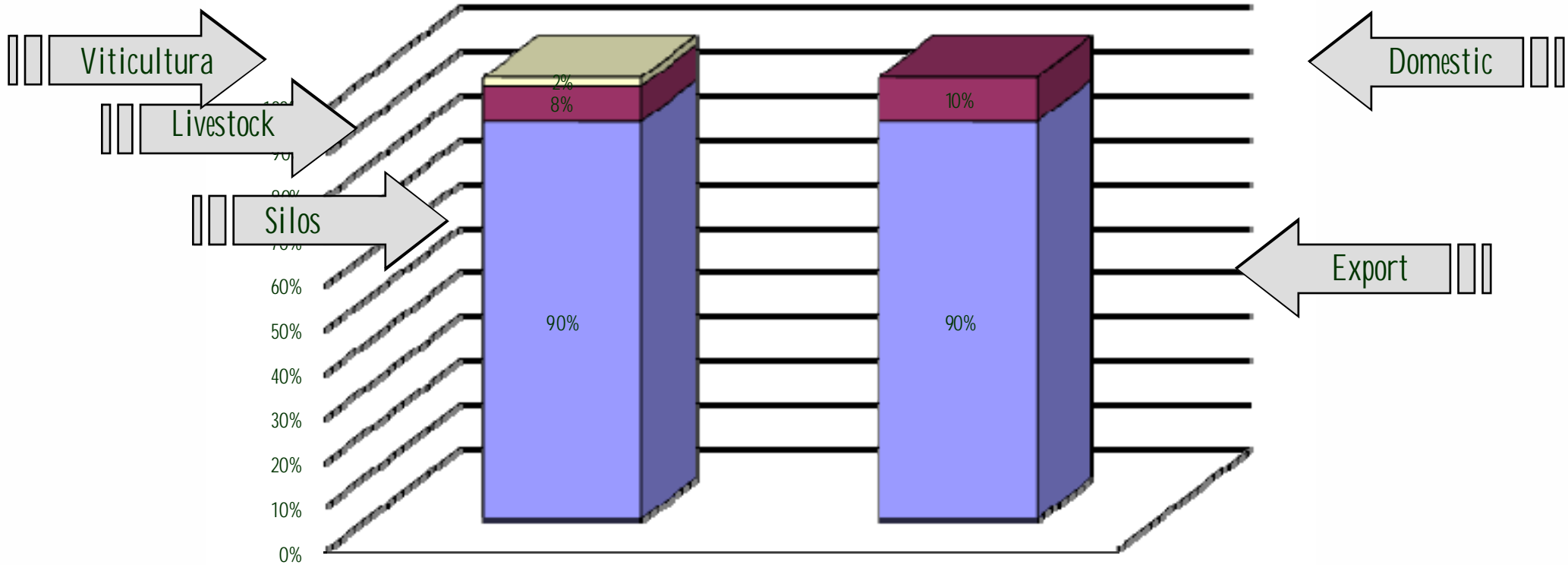


# Our Company

- Factory with aprox. 27.000 m<sup>2</sup> of buildings.
- Warehouse of 9.500 m<sup>2</sup> for products in stock
- Warehouse for raw materials, average 3000 tons of steel on coils
- Expansion possibilities: another 90.000 m<sup>2</sup> are owned by the company
- Top quality through "state-of-the-art" production & certified raw materials



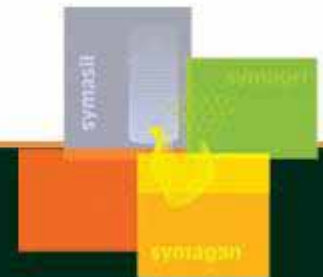
# Our Company, figures



2008: 21 Mio. €  
Groth rate 10%



International presence







# Our Factory



STATE OF THE ART PRODUCTION FACILITIES;  
GUARANTEE HIGHEST QUALITY FINISHING



SILOCYLINDER  
PRODUCTION



# Our Factory



SILOROOF  
PRODUCTION



CNC PUNCHING  
AND ROBOTIZED  
CONFORMING  
PRESS

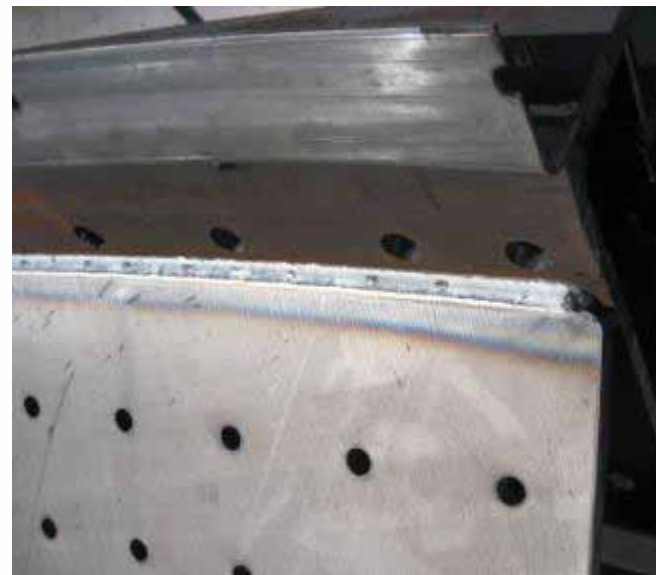




# Our Factory

AUTOMATIZED MATERIAL HANDLING

AUTOMATIZED WELDING AND HANDLING OF MATERIALS



ROBOT WELDING OF  
LEGS , ROOF COLLARS ,  
BASE PLATES AND  
COMPRESSION RINGS



# Our factory - Silos on our ground



Spain, SYMAGA Factory, "Demo" Silos  
1 Silos 1223/18, conical concrete bottom 37°  
4 Silos 460/5T45  
Double wall, double roof, double hopper for silo protection



# Our Products

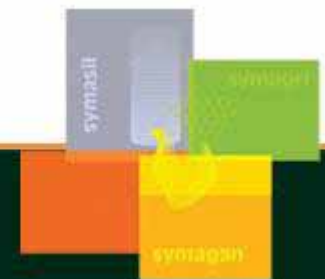
Steel silos



Agricultural  
equipment

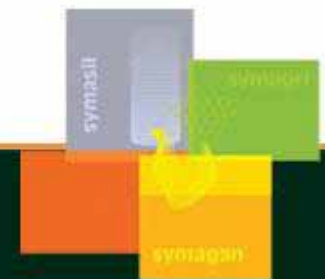


Poultry &  
farm equipment



# Silos

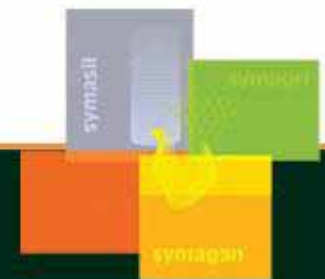
- Farm-, Flat Bottom and Hopper Silos
- Capacities from 10 to 20.000 m<sup>3</sup>
- Farm silos: galvanized, prelaquered or stainless steel from 6 to 20 tons.
- Grain silos which can satisfy all your storage needs
- Special solutions



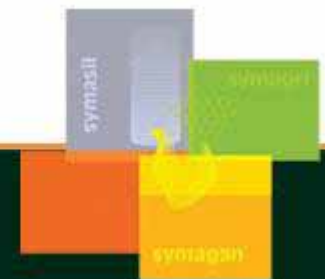


# Silos

- Load calculations as per DIN or ANSI Standards.
- All components galvanisation 450 gr/m<sup>2</sup> (roof sheets, body sheets, stiffeners and reinforcements)
- Screwing and bolting bichromated, quality 8.8
- ATEX capability, on demand
- Possibilities for world wide erection & supervision



- **ACCESSORIES:** In all its silos, SYMAGA includes a standard set of accessories, such as steps, doors in the cylindrical body and in the roof, etc.
- SYMAGA also offers the option of lining the cylindrical body with pre-lacquered sheeting to avoid corrosion and provide thermal insulation.
- We solve all problems related to silo access, as well as those that come from fitting loading and unloading machinery.



# Farm silos

MODELO MODEL MODÈLE	CAPACIDAD CAPACITY CAPACITÉ		A	B	C	D	ALTURA TOTAL TOTAL HEIGHT HAUTEUR TOTALE
	M <sup>3</sup>	TONS (50 KG/MT)	MM.	MM.	MM.	MM.	MM.
<b>Ø 2,50 M. T 67°</b>							
SG231T67P4	9,61	8,25	720	1.140	2.245	1.125	5.230
SG232T67P4	14,34	9,32	720	2.280	2.245	1.125	6.370
SG233T67P4	19,07	12,39	720	3.420	2.245	1.125	7.510
SG234T67P4	23,80	15,47	720	4.560	2.245	1.125	8.650
<b>Ø 2,50 M. T 57°</b>							
SG250/1T57	10,43	8,78	765	1.140	1.600	1.120	4.625
SG250/2T57	16,23	10,55	765	2.280	1.600	1.120	5.765
SG250/3T57	22,03	14,32	765	3.420	1.600	1.120	6.905
SG250/4T57	27,83	18,09	765	4.560	1.600	1.120	8.045
SG250/5T57	33,63	21,86	765	5.700	1.600	1.120	9.185
<b>Ø 2,50 M. T 60°</b>							
SG250/1T60	10,86	7,06	765	1.140	1.805	810	4.520
SG250/2T60	16,66	10,83	765	2.280	1.805	810	5.660
SG250/3T60	22,46	14,60	765	3.420	1.805	810	6.800
SG250/4T60	28,26	18,37	765	4.560	1.805	810	7.940
SG250/5T60	34,06	22,14	765	5.700	1.805	810	9.080
<b>Ø 2,50 M. T 67°</b>							
SG250/1T67	12,03	7,82	765	1.140	2.374	1.070	5.549
SG250/2T67	17,82	11,58	765	2.280	2.374	1.070	6.689
SG250/3T67	23,61	15,36	765	3.420	2.374	1.070	7.829
SG250/4T67	29,41	19,13	765	4.560	2.374	1.070	8.969
SG250/5T67	35,21	22,90	765	5.700	2.374	1.070	9.909

Storage Volume from  
9,61m<sup>3</sup> to 35,23 m<sup>3</sup>

Diameters  
2,3 m and 2,5 m

pre-lacquered POLIESTER  
sheets or  
galvanized sheets

All parts galvanisation  
450 gr/m<sup>2</sup>



# Farm silos



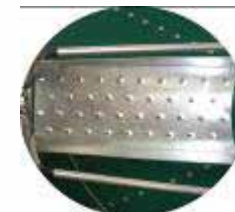
Right view



Main general view



Left view



Antislip walkway



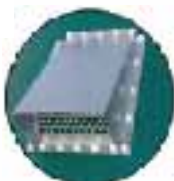
Ladder with safety cage,  
with removable lower  
part (standard)

# Farm silos

Support on roof for mechanical loading (option)



Roof vent (option)



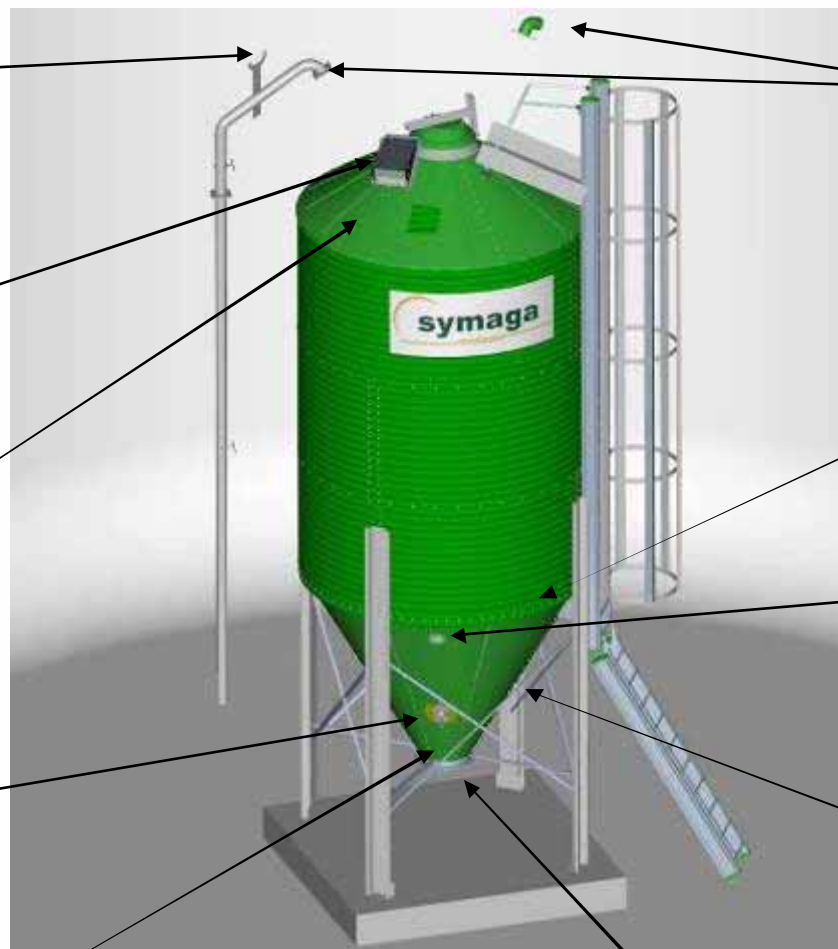
Reinforcing waves on roof (standard)



Inspection door in hopper (option)



Reinforced hopper and one piece collar, bolt free (standard)



Pneumatic loading pipe and decompression elbow (option)



Waterslider (standard)



Level viewer in hopper (option)



Auxiliary nozzle (option)

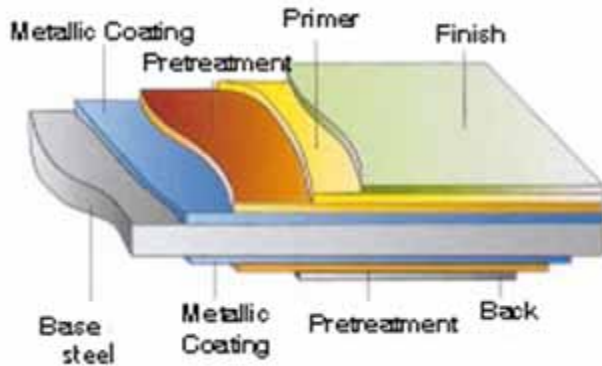


Auger boot and distribution systems (option)



# Our Poliester Prelacquered Farm silos

SCHEMATIC DIAGRAM SHOWING THE PRODUCT FINISH



## Characteristics:

Galvanized steel with poliester coating  
Enhanced corrosion resistance.

- High durability in outdoor applications
  - Handling flexibility and resistance
- Poliester coating applied in steel mill during steel manufacturing



CHARACTERISTICS	APPLICABLE STANDARD	NOMINAL VALUES
Coating thickness	ECCA T.1	25 microns
Gloss (60°)	ECCA T.2	25 - 50 %
Pencil Hardness	ECCA T.4	F-H
Flexibility	ECCA T.7	≤ 1 T With no detachment ≤ 8 T With no cracks
Salt Spray Fog	ECCA T8 ISO 7253	ASTM B 117 UNE-30150
Adhesion after indentation	ECCA T6	1 kg/mm. thickness
Solubility	ECCA T-11	> 100 double rubs.
Fire performance	UNE-23727	M-1
Max working temperature	-	120 °C



# Farm silos

## SPECIAL SOLUTIONS

Trailer unloading with flexible auger (aprox. 2 Ton/h, auxiliary nozzle)

Optional SYMAGA supply



# Farm silos



## Poultry and farm installations



# Hopper Silos, without structure

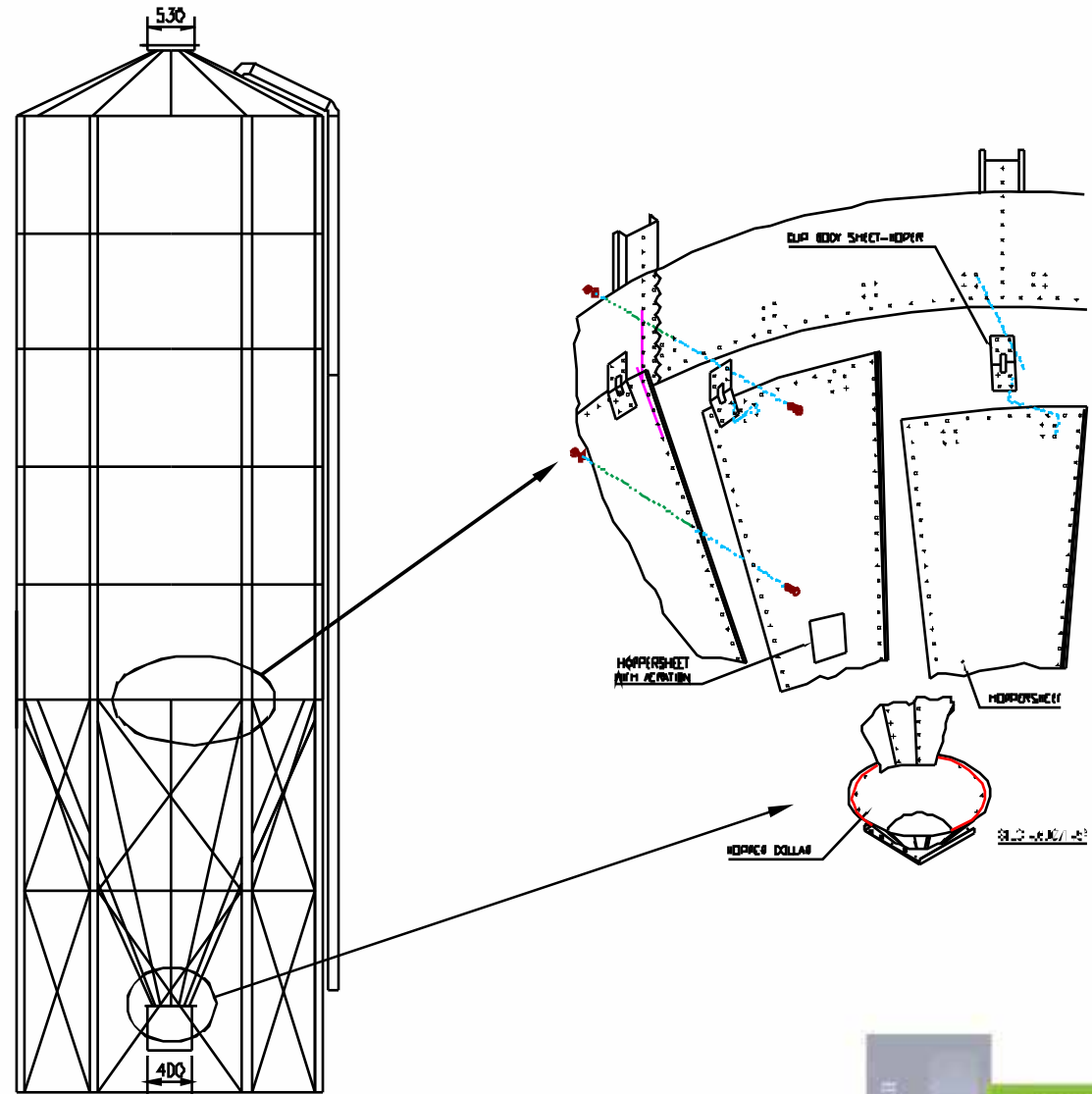
Small Hopper Silos

Diameters  
3,0 m up to 6,10 m

Capacities  
30 m<sup>3</sup> up to 266 m<sup>3</sup>

Without compression  
ring

Hopper slope  
45° / 60° / 66°



# Hopper Silos, with structure

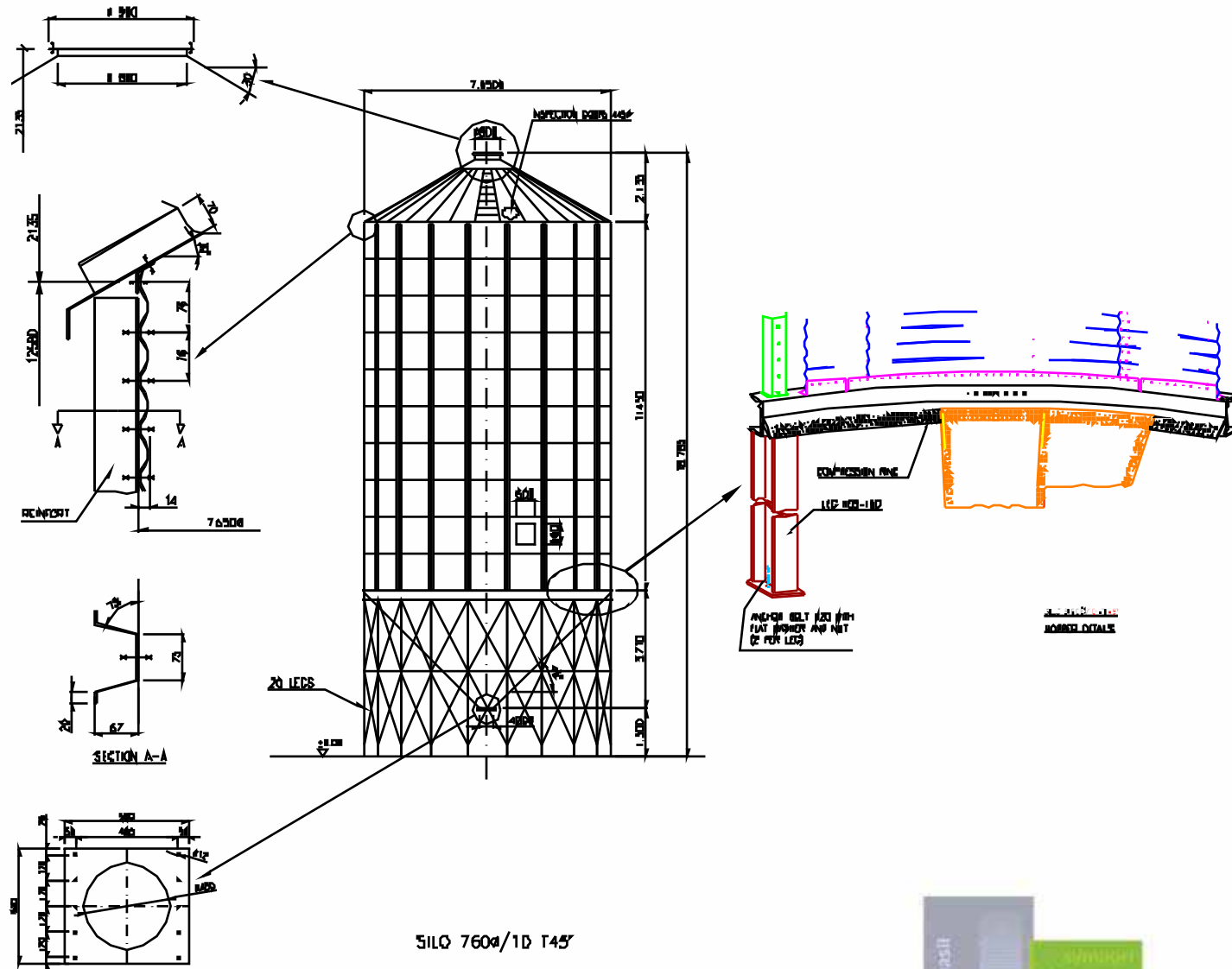
Hopper Silos

Diameters  
4,6 m up to 12,23 m

Capacities  
153 m<sup>3</sup> up to 2.600 m<sup>3</sup>

With compression ring

Hopper slopes  
45° & 60°





# Flat Bottom Silos

Flat Bottom Silos

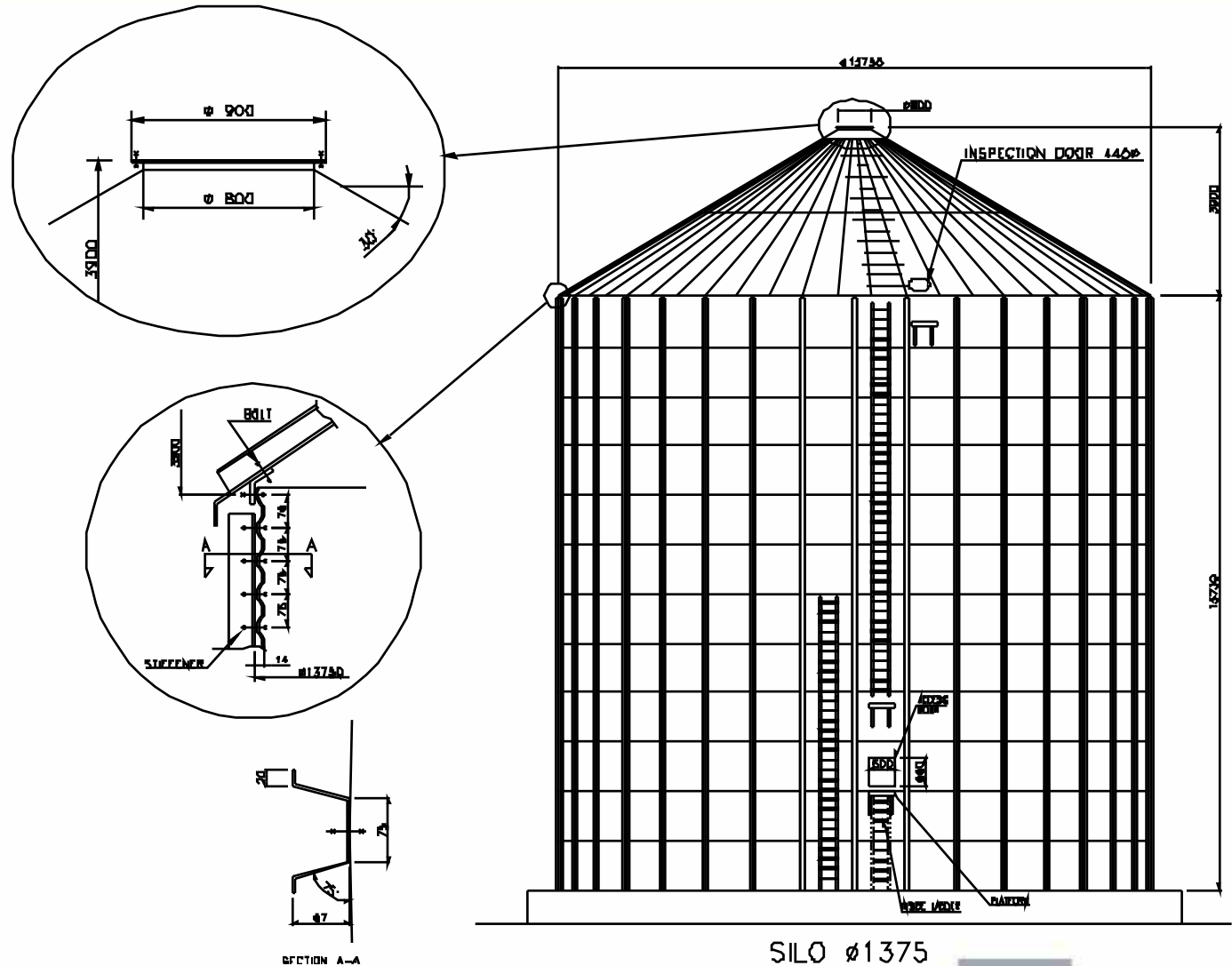
Diameters  
4,6 m up to 32,08 m

Capacities  
81 m<sup>3</sup> up to 20.000 m<sup>3</sup>

Conical concrete bottom

Diameters  
4,6 m up to 12,23 m

Capacities  
88 m<sup>3</sup> up to 2.642 m<sup>3</sup>



# Our Silos



BIOETHANOL PLANT,  
La Coruña, Spain  
6 Silos Ø 24,44  
MAIZE



# Our Silos



MALTING PLANT

Nigeria

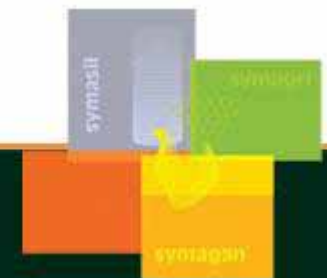
8 Silos 1680/10

4 Silos 920/13T45

1 Silo 840/12T60

4 Silos 830/13T45

1 Silo 687/12T45



# Our Silos



BREWERY

Samara, Russia

5 silos Ø 12,23/12 with 45° steel hopper

3 silos Ø 687/13 with 45° steel hopper



# Our Silos

GRAIN RECEPTION PLANT

Sankt Petersburg, Russia

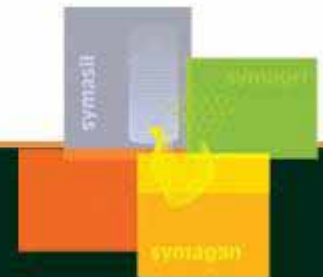
5 Silos 1834/15

13 Silos 1298 / 15

On elevated concrete foundation  
with hopper



[www.symaga.com](http://www.symaga.com)



# Our Silos



BREWERY

Romania

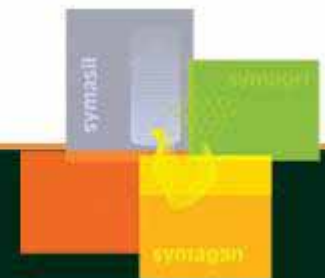
4 x 840/13T/45

2 x 760/11T60

with protective coating (double sheet)



[www.symaga.com](http://www.symaga.com)





# Our Silos



STORAGE AND DRYING

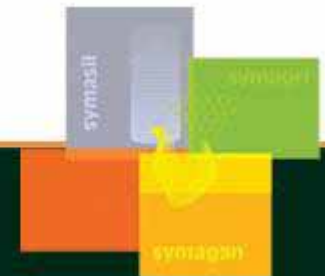
Tasharukiat / Tripoly, Libya

5 Silos 1223/15 + 2 Silos 760/12T45

WHEAT



[www.symaga.com](http://www.symaga.com)



# Our Silos

## BREWERY

Obolon, Ukraine

2 Silos 840/13T45

6 Silos 993/16T45

1 Silos 840/11T60

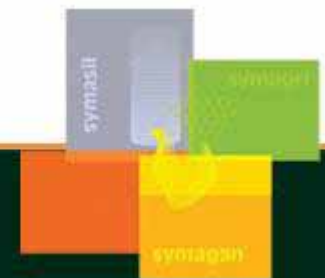
1 Silos 535/6T45

2 Silos 535/4T60

7 Silos 535/3T45



[www.symaga.com](http://www.symaga.com)





# Our Silos



STORAGE AND DRYING  
Sirte / Tripoly, Libya

6 Silos 1223/15

2 Silos 760 / 12 T45

WHEAT



# Our Silos



BIOMASS PRODUCTION

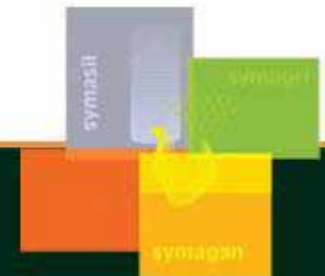
Sweden

1 Silo 2444/23

WOOD PELLETS



[www.symaga.com](http://www.symaga.com)



# Our Silos



## STORAGE

Almarai Corporation - Saudi Arabia

40 Silos Ø 16,80

MAIZE and ANIMAL FEED



# Our Silos



BREWERY  
CARLSBERG, Thailand  
3 Silos Ø 18,34 On conical concrete hopper  
28 silos 840/13 with 45° hopper  
Double wall and double roof  
MALT, RICE and BARLEY



[www.symaga.com](http://www.symaga.com)

symasit

symagin



# Our Silos

Silos for Feed Mill  
Company SKYLARK  
Hatcheries / INDIA

4 silos 610/11T45  
&  
20 silos 250/5T67  
(Farm silos)



# Our Silos



## BREWERY

Angarsk, Russia

3 silos Ø 12,23/17 with 45° steel hopper

3 silos Ø 760/11 with 45° steel hopper

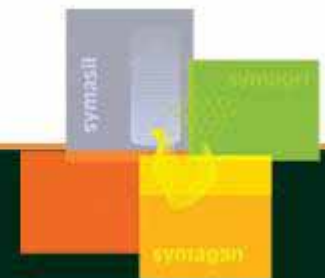
1 silo Ø 840/12 with 45° steel hopper



MALT and BARLEY



[www.symaga.com](http://www.symaga.com)





# Our Silos



## BIODIESEL PLANT

Germany

10 Silos 1680/10 for RAPE SEEDS

10 Silos 1375/11 for RAPE MEAL with double wall and inner set of flat sheets





# Our Silos



## FEED MILL FACTORY Linās Viza, Lithuania

8 Silos 1680/12

8 Silos 760/11T45

1 Silos 535/5T45 (\*)

2 Silos 350/3T66 (\*)

(\*) Silos over structure

# Our Silos



BREWERY

Colombia

5 Silos 840/11T45

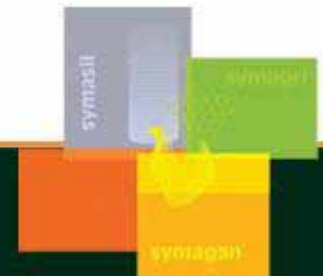
2 Silos 610/10T45

1 Silos 535/7T60

MALT AND BARLEY



[www.symaga.com](http://www.symaga.com)





# Our Silos

BIOETHANOL PLANT  
Hustopece, Czech Republic

4 Silos 1528/17  
2 Silos 610/10T45

MAIZE





# Our Silos

BIOETHANOL PLANT  
Trmice, Czech Republic

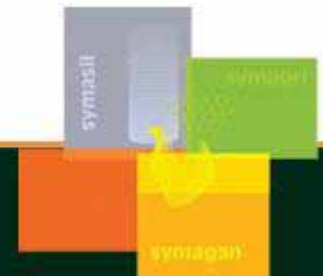
4 Silos 2444/18

2 Silos 760/11T60

WHEAT



[www.symaga.com](http://www.symaga.com)



# Our Silos



BIOMASS PRODUCTION  
Portugal

2 silos 2444/15

2 silos 535/9T45

KORK and WOOD CHIPS



# Our Silos

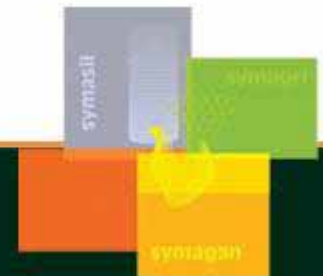


ENERGY PRODUCTION  
Poland  
Steel hopper silos

WOOD PELLETS



[www.symaga.com](http://www.symaga.com)





# Our Silos

## BIOMASS PRODUCTION

Portugal

2 silos 1528/12

2 silos 760/9

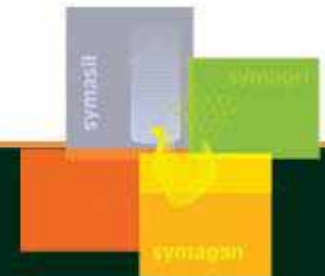
1 silo 840/8 (Mass discharge)



## WOOD CHIPS and PELLETS



[www.symaga.com](http://www.symaga.com)



# Our Silos



GRAIN STORAGE

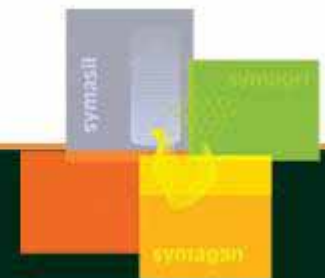
Palazuelo / Badajoz, Spain

7 x 1528/12

PADDY RICE



[www.symaga.com](http://www.symaga.com)





# Our Silos



BREWERY

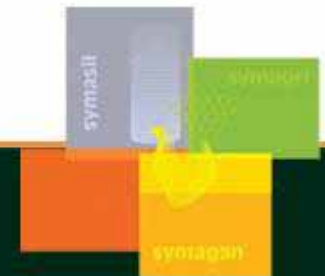
Vietnam

4 x 920/10 T45

3 x 460/6 T45



[www.symaga.com](http://www.symaga.com)





# Our Silos

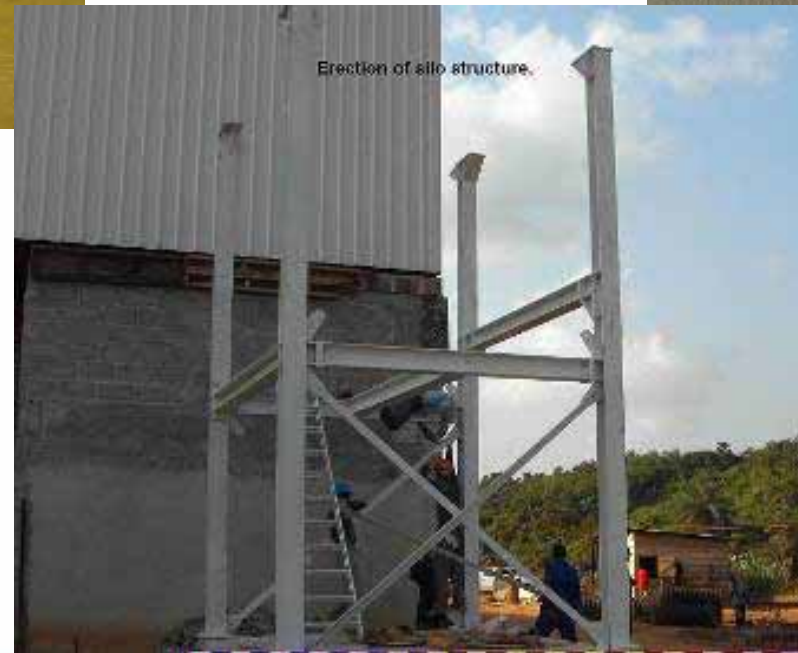


## DELIVERY SILOS

Silos for loading trucks, trains, etc..

Structure also available

# Our Silos

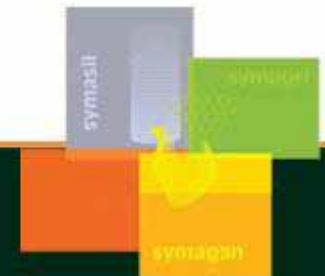


CACAO BEANS  
Ghana / Africa

1 silo 350/6T66 for structure



[www.symaga.com](http://www.symaga.com)





# Demonstrated experience in.....



Sunflower



Kork and wood chips

Maize



Malt and Barley



Animal  
Feed



Rape meal



# Demonstrated experience in.....



Malt and Barley

Wood Pellets



Rape Seeds

Paddy Rice



Wheat

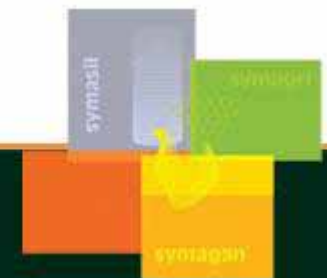


Cacao beans



and much more.....

[www.symaga.com](http://www.symaga.com)



# SIMAGRI – AGRICULTURE EQUIPMENTS

## WATER TANKS:

from  $\varnothing$  3,8 m and 12 m<sup>3</sup>

to  $\varnothing$  27,50 m and 2.200 m<sup>3</sup>

With and without roof





# SIMAGAN – LIVESTOCKS EQUIPMENTS

Complete solutions - From the silo to the distribution, feeding systems and technical equipment for poultry and pig farms

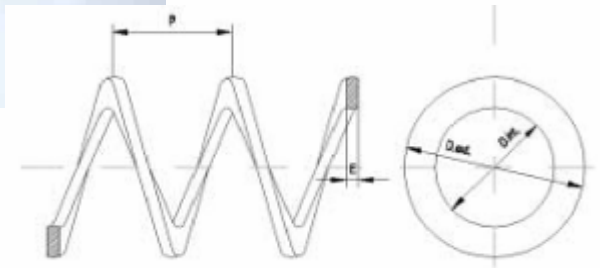




# SIMAGAN – LIVESTOCKS EQUIPMENTS

## AUGERS for distribution systems

### Auger boots

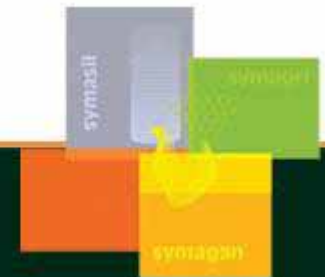


### Complet distribution components

### Flex Augers

from 400 kg/hour

To 3.500 kg/hour



# SIMAGAN – LIVESTOCKS EQUIPMENTS

## CHAINS for distribution systems



Chain boots



Distribution Components



Chains

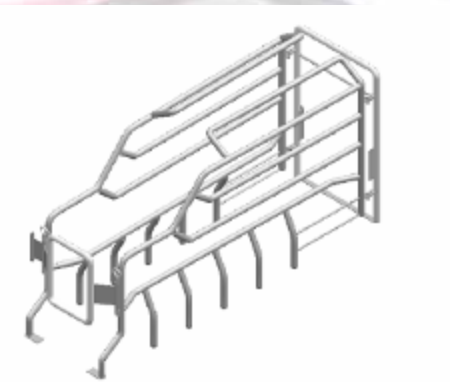
Up to 2000 kg/hour



Drive Stations

# SIMAGAN – LIVESTOCKS EQUIPMENTS

Equipment for livestock, boxes, crates, feeding troughs, slats, drinkers, PVC divisions, etc..



[www.symaga.com](http://www.symaga.com)





# References in specialized literature

**GRAIN & FEED**  
milling technology  
September/October 2006

Accelerate classification of grain according to quality parameters and **DOM** content

**Cereal cooking**

**FEATURE**

**Cereal cooking**

**LA FORMULA DEL EXITO EN RENOVACION**

**EXPERIENCIA + FIABILIDAD**

El cereal es el alimento básico de la alimentación humana y animal. Su calidad depende de muchos factores, entre ellos, de su estado de conservación. En este sentido, el almacenamiento es una etapa fundamental en el proceso de producción y comercialización del grano. En este número de la revista, se aborda el tema de la conservación del grano, desde su recolección hasta su almacenamiento, pasando por el transporte y el procesamiento. Se analizan los factores que influyen en la calidad del grano y se presentan las mejores prácticas para garantizar su conservación durante todo el ciclo de vida. Además, se muestran algunas de las soluciones tecnológicas más avanzadas para mejorar la eficiencia y la sostenibilidad de los procesos de conservación del grano.



**CV ENERGIA**  
REVISTA INTERNACIONAL DE ENERGIA Y MEDIOAMBIENTE  
119 Septiembre 2007  
Año XI

**ENVIRONMENTAL ENGINES & COGEN**

**LA FORMULA DEL EXITO EN RENOVACION**

**EXPERIENCIA + FIABILIDAD**

## CV ENERGIA, September 2007

**Apuesta por la calidad**

Anualmente se transforman hasta 10.000 toneladas de acero exclusivamente para la fabricación de silos

**SYMAGA S.A.** es un empresa especializada en el proceso para el sector agrario, concretamente en la fabricación de silos y plantas de agua en acero. En los últimos tiempos, la empresa ha suministrado un importante número de silos de almacenamiento para el sector de la bioenergía. Por su parte, el sector de los biocombustibles también ha demandado este tipo de productos. Solo entre 2005 y 2007, la empresa suministró silos con una capacidad total de almacenaje de 200.000 toneladas.

El **CONCRETO** es el material más utilizado en la fabricación de silos. Este tipo de silos, de gran capacidad, se fabrican en acero y tienen una vida útil de hasta 20 años. Su capacidad puede variar entre 100 y 10.000 toneladas. Los silos de almacenamiento para el sector de la bioenergía son de gran capacidad y se fabrican en acero. Su capacidad puede variar entre 100 y 10.000 toneladas. Los silos de almacenamiento para el sector de la bioenergía son de gran capacidad y se fabrican en acero. Su capacidad puede variar entre 100 y 10.000 toneladas.

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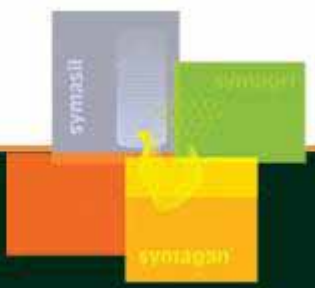
**symaga**

El silo es el elemento más importante de un sistema de almacenamiento de grano. Su capacidad puede variar entre 100 y 10.000 toneladas. Los silos de almacenamiento para el sector de la bioenergía son de gran capacidad y se fabrican en acero. Su capacidad puede variar entre 100 y 10.000 toneladas.

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