YOURSILO SOFTWARE

YOUR CUSTOM-MADE SOFTWARE FOR SILOS

Specialist in grain storage silos 25 years

YourSiloSoftware

01

is an experienced team with a network of professionals in grain silo storage and processing..

02

is designer and supplier independent, ensuring complete neutrality.

03

uses practical experience with diverse customers to understand each unique circumstance.

04

adeptly handles diverse requests spanning practical, technical, commercial, and R&D areas.

05

uses deep grain storage expertise to assist industries in technical solutions, improving grain management, and reducing cereal losses.

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YSS-SILOS 3D – V.2020

- Major manufacturers buy foreign companies to enhance local presence.
- Local businesses invest in silos and grain technology.
- Traditional importing regions aim to develop their own technology.

Similar to other industries:
“Produce where you need it”.

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Users and investors become more demanding

- Full compliance with international norms and standards is required.
- Compliance is necessary for authorities, insurance, and corporate governance.
- Quick, accurate offers and technical documentation support are demanded.

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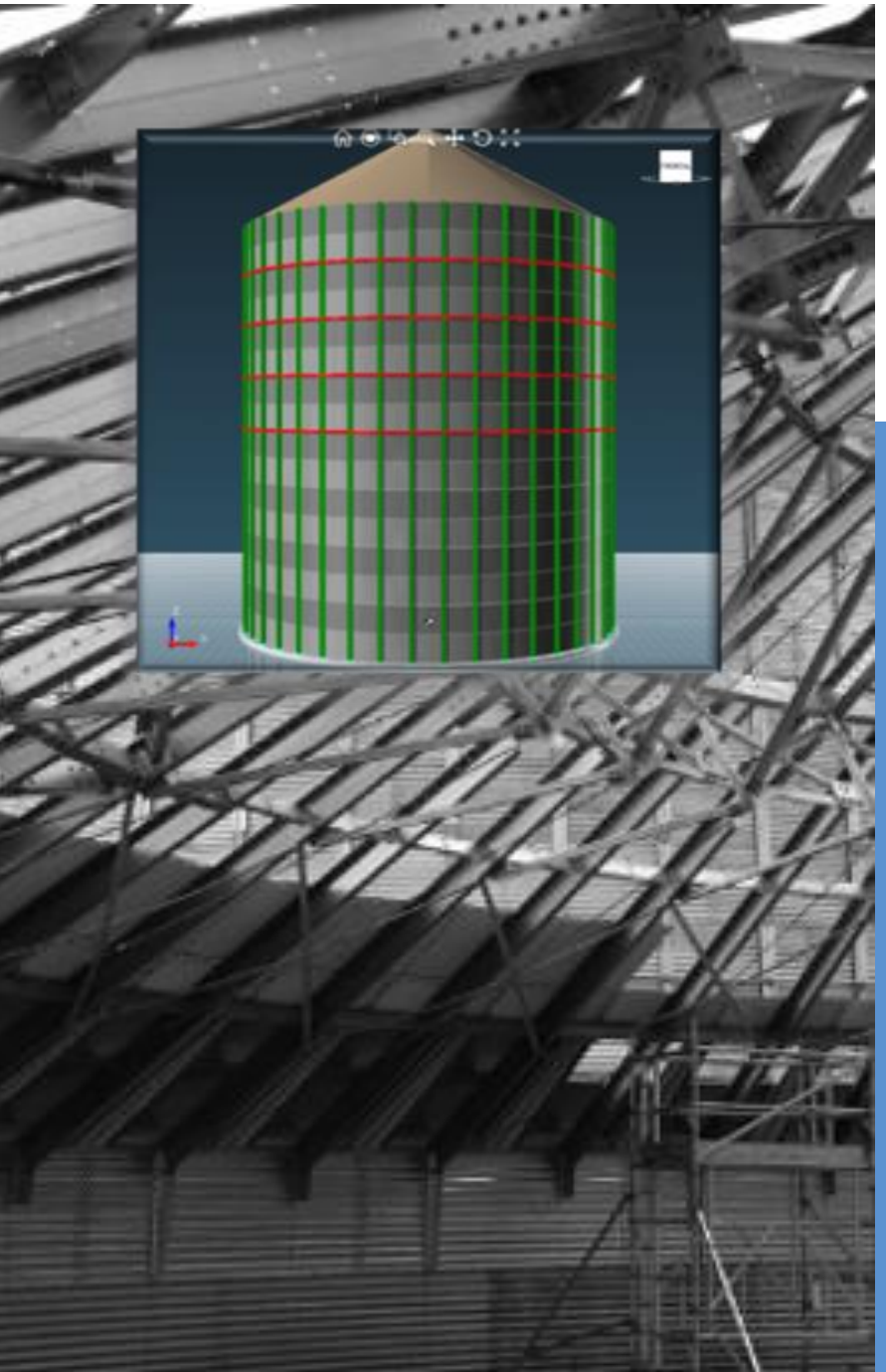

Customized grain silo calculation tool

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Designs, calculates, verifies, and measures silo components

- Wall sheets and their vertical and horizontal bolted joints.
- Vertical stiffeners
- Base plates to join these vertical stiffeners to the foundation
- Anchor bolts on the base plates
- Foundation loads to be sent to civil works in order to calculate the silo foundation.

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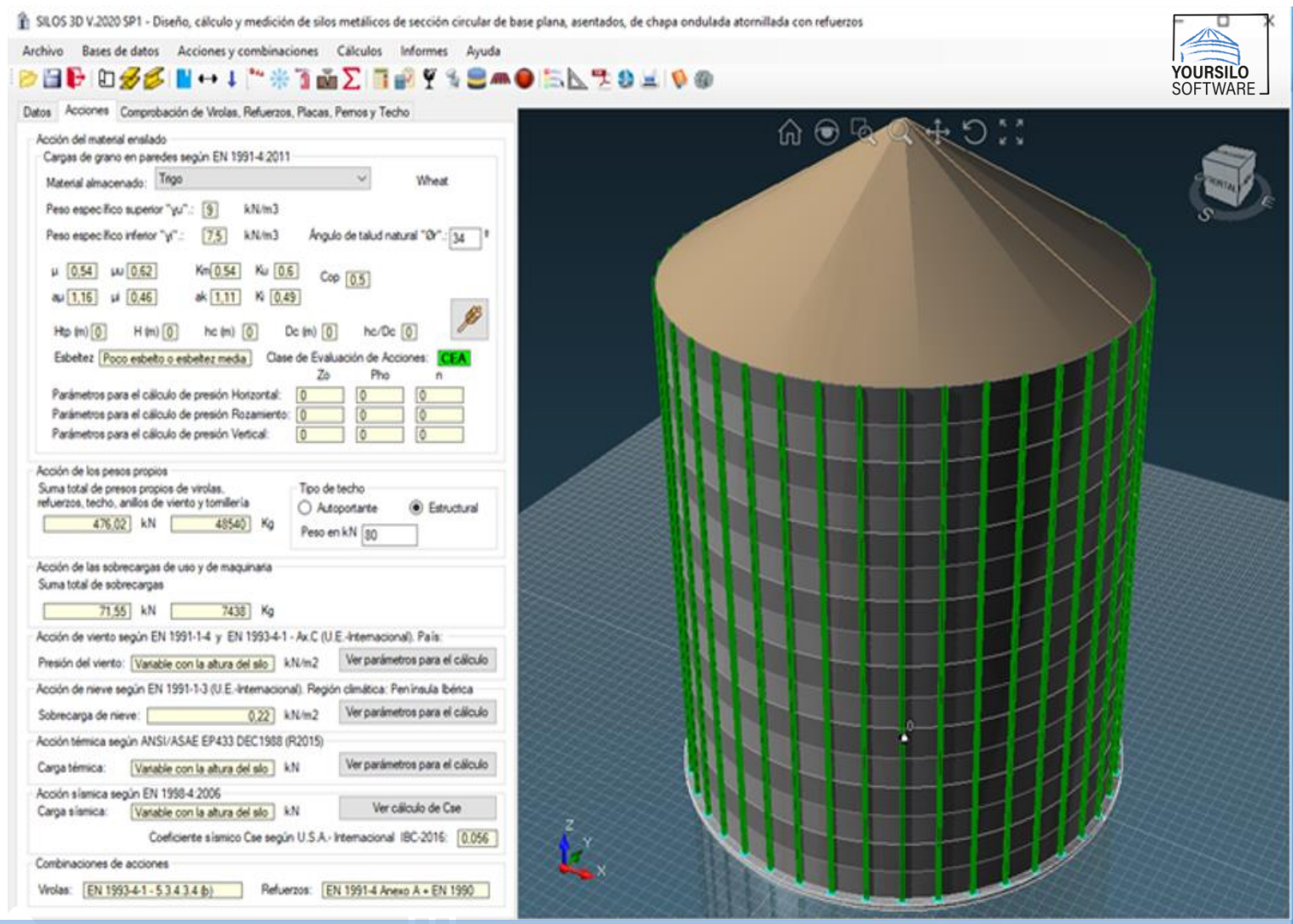
Silo Calculation Tool

Generate your silo model and / or silo range

Due to the flexibility of the calculation program it can be fully customized, e.g by including company specific costing date base, so a specific report can return a complete costing report.



Full calculation reports

Venus Silo layout sketch

Report on all sheet and stiffener thickness

3D Silo layout

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Standard Calculation Norms

Grain loads to ANSI ASAE or to EUROCODE UNEEN 1991

External Actions: Wind loads to various norms: ANSI ASAE / EUROCODE

External Actions: Snow loads to various norms: ANSI ASAE / EUROCODE

External Actions: Seismic loads to various norms: ANSI ASAE / EUROCODE

* *If required other norms can be studies and implemented*

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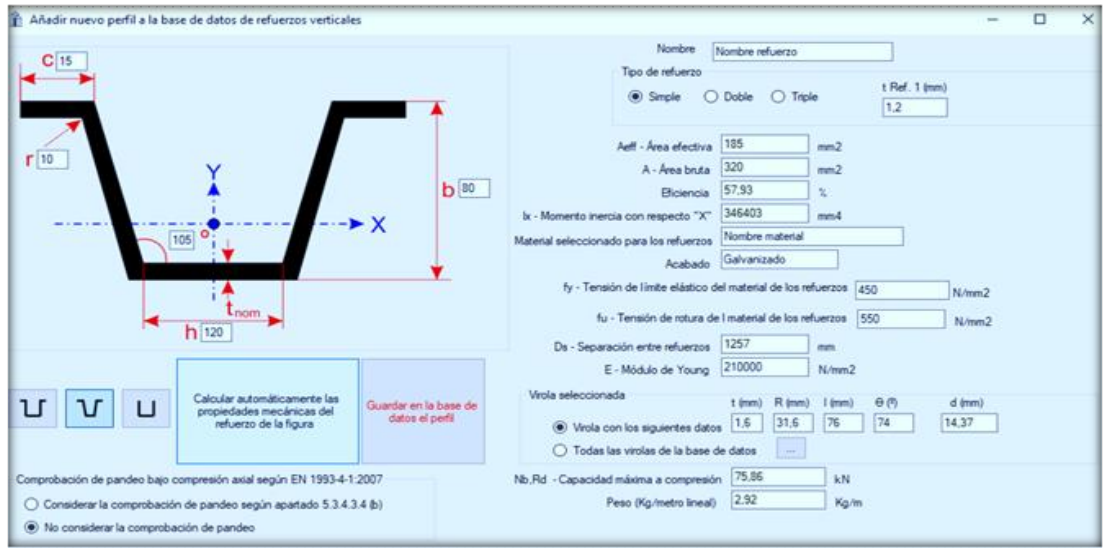
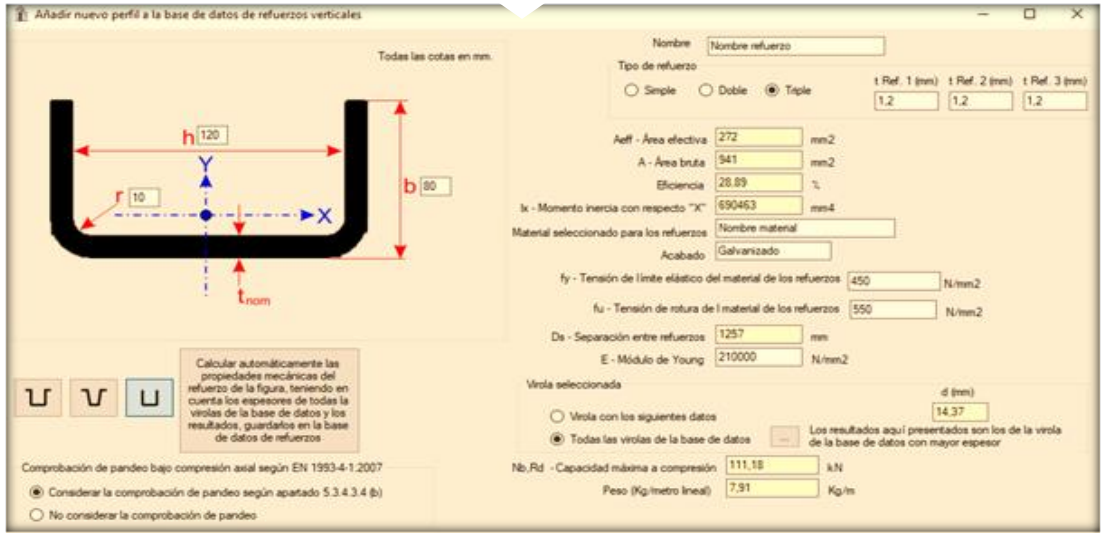
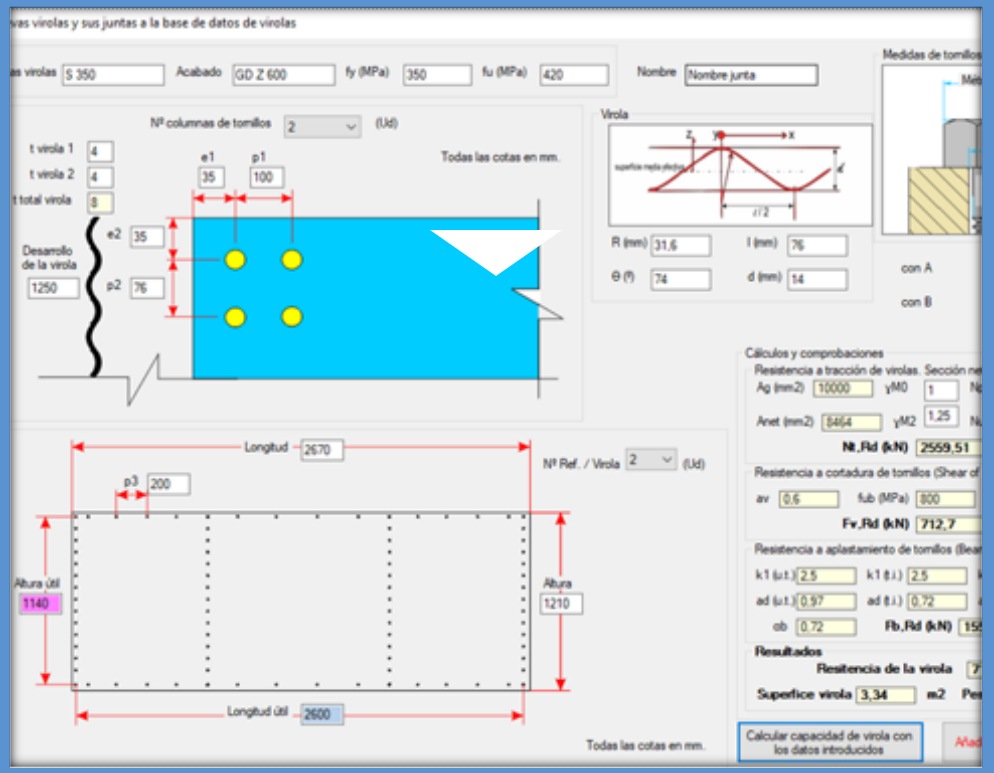


Define your main material parameter



Define your main silo components

- Wall sheets
- Stiffeners
- Splices
- Base plates



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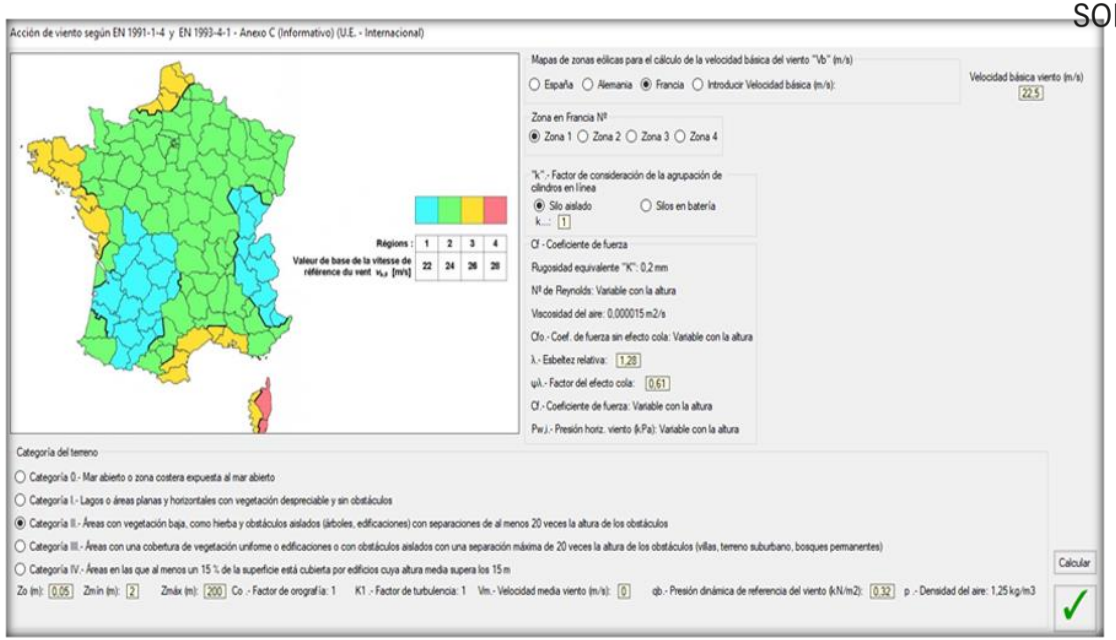

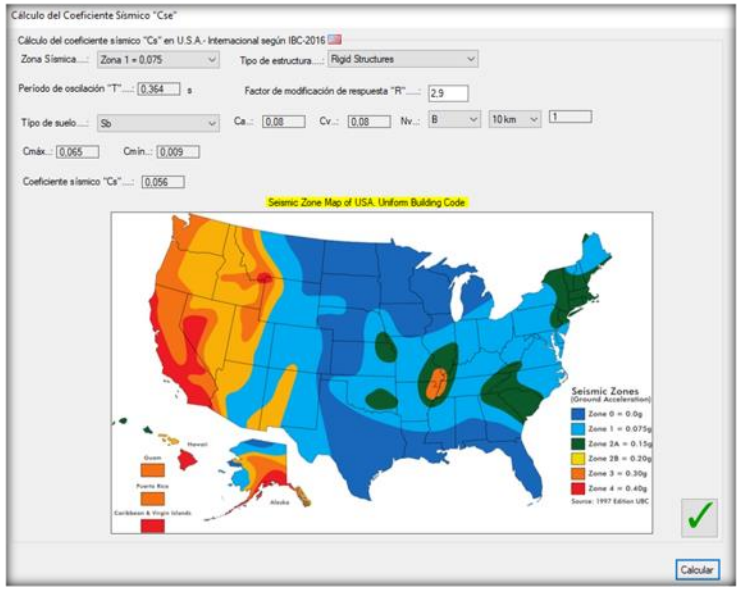

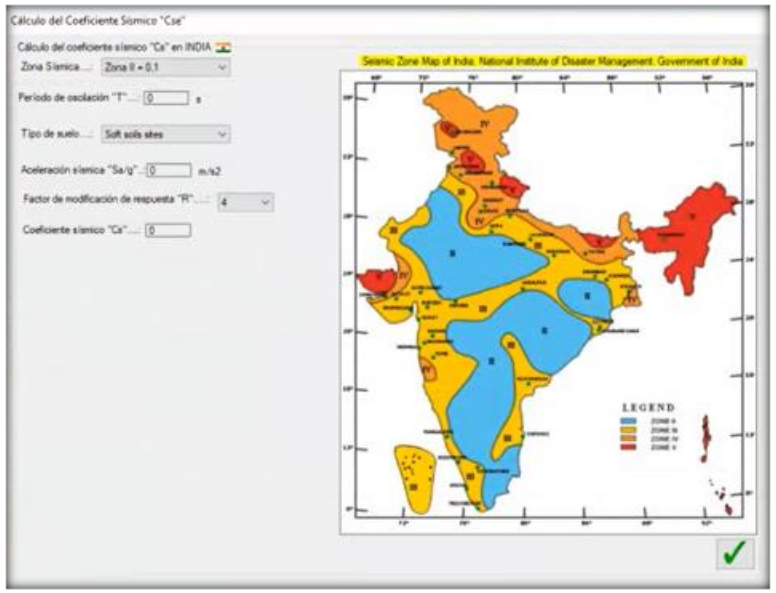

- For the silo calculation define the required standards
- If you miss a specific regional standard it can be studied and impletented
- The standardd version includes a signifficant amount of international maps that can be accessed

Perform the silo calculation and confirm various tecnical parameters on compliance

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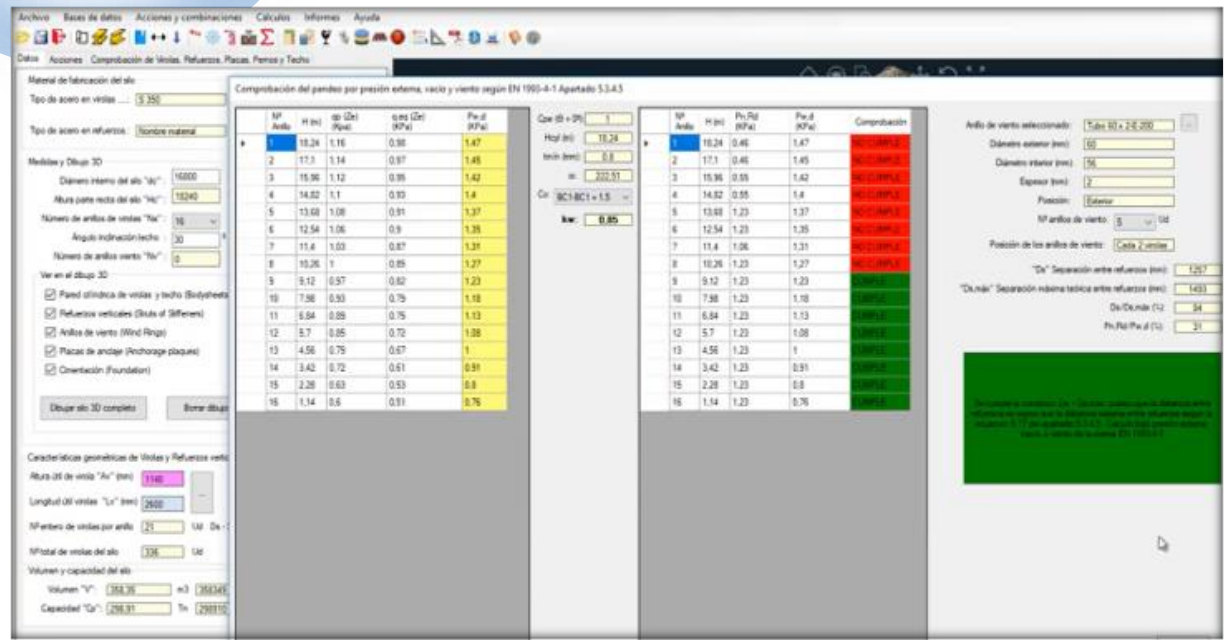
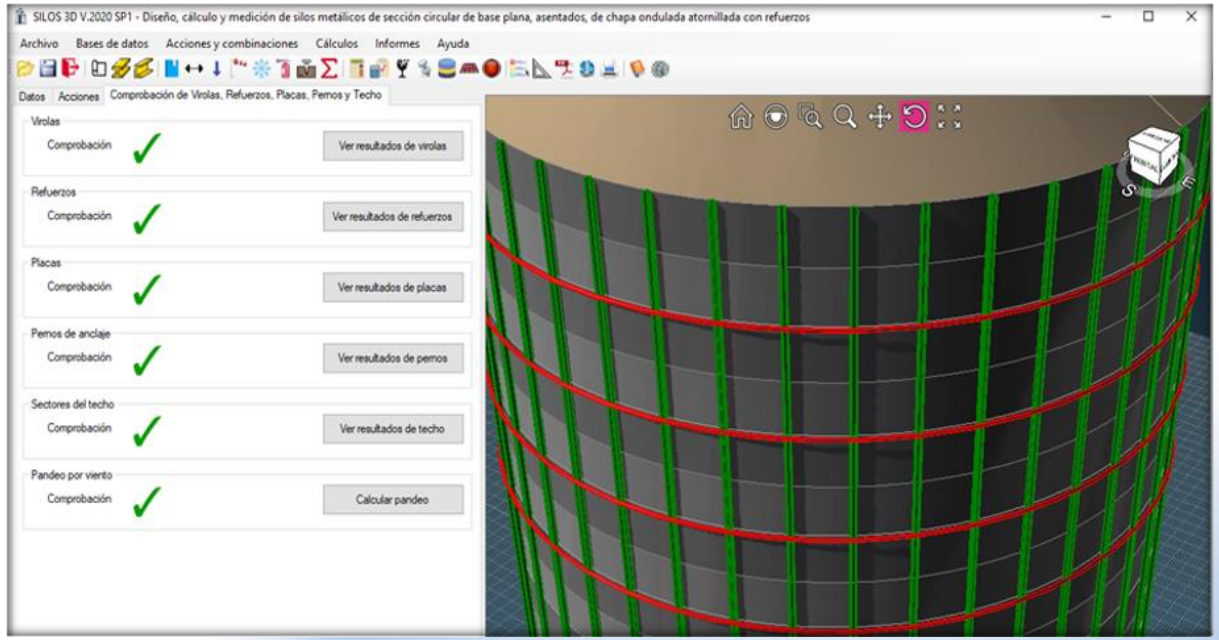


Example of failed buckling verification

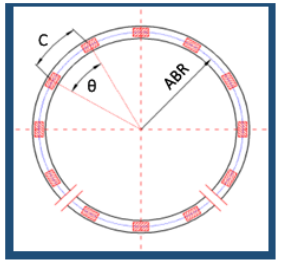


Silo compliant on all positions

5.- FOUNDATION LOADS

LOAD SUMMARY	FORCES PER STRUT			OVERALL FORCE AND MOMENTS	
	Maximum Vertical Load N_s (kN/strut)		Maximum Horizontal Load V_s (kN/strut)	Maximum Horizontal Load V_t (kN)	Overturning Moment M_t (kN-m)
	(+)	(-)			
Self Weight	13.3	-	-	-	-
Grain (Filling)	918.5	-	-	-	-
Grain (Discharge)	1159.3	-	-	-	-
Wind	57.8	-57.8	12.5	326.1	4884.7
Snow	9.0	-	-	-	-
Imposed Load	3.4	-	-	-	-
Catwalk Loads	44.5	-	-	-	-
Seismic (Full Silo)	0.0	0.0	0.0	0.0	0.0
Seismic (Empty Silo)	0.0	0.0	0.0	0.0	0.0

Note: All values in this table are characteristic (unfactored) values

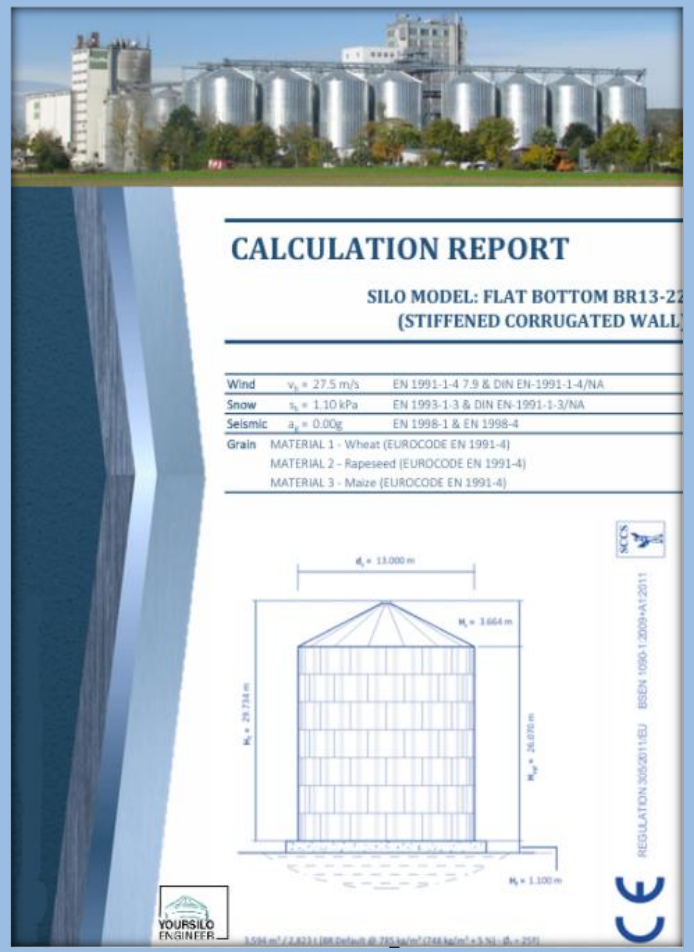


PRESSURE ON BOTTOM

109.6 kPa

MAIN FOUNDATION DIMENSIONS

Anchor Bolt Radius (ABR)	ABR = 6.615 m
Chord "C"	1.599 m
Angle θ	13.8 º
Number of Struts	26
Number of Base Plates	26
Anchor Bolt / Base Plate	1



A.1.- SCHEMATIC SILO DIAGRAM

SILO MODEL: FLAT BOTTOMBR 13-22 (CORR & STIFF)

		Strut Line 1 (x13)	Strut Line 2 (x13)
1	t = 1.6 mm [4 x M10 8.8] [Eff. Height. = 1.185 m)	1.6S	1.6S
2	t = 1 mm [4 x M10 8.8] [Eff. Height. = 1.185 m)	3.0S	2.0S
3	t = 1 mm [4 x M10 8.8] [Eff. Height. = 1.185 m)		3.0S
4	t = 1.3 mm [4 x M10 8.8] [Eff. Height. = 1.185 m)	3.0S	
5	t = 1.3 mm [4 x M10 8.8] [Eff. Height. = 1.185 m)		4.0S
6	t = 1.3 mm [4 x M10 8.8] [Eff. Height. = 1.185 m)	4.0S	
7	t = 1.6 mm [4 x M10 8.8] [Eff. Height. = 1.185 m)		4.0S
8	t = 1.6 mm [4 x M10 8.8] [Eff. Height. = 1.185 m)	4.0S	
9	t = 1.6 mm [4 x M10 8.8] [Eff. Height. = 1.185 m)		5.0S
10	t = 1.8 mm [4 x M10 8.8] [Eff. Height. = 1.185 m)	5.0S	
11	t = 1.8 mm [4 x M10 8.8] [Eff. Height. = 1.185 m)		6.0S
12	t = 1.8 mm [4 x M12 8.8] [Eff. Height. = 1.185 m)	4S+4S	
13	t = 2 mm [4 x M10 8.8] [Eff. Height. = 1.185 m)		4S+5S
14	t = 2 mm [4 x M10 8.8] [Eff. Height. = 1.185 m)	4S+6S	
15	t = 2 mm [4 x M10 8.8] [Eff. Height. = 1.185 m)		5S+5S
16	t = 2 mm [4 x M12 8.8] [Eff. Height. = 1.185 m)	5S+6S	
17	t = 2 mm [4 x M10 8.8] [Eff. Height. = 1.185 m)		6S+6S
18	t = 2.2 mm [4 x M12 8.8] [Eff. Height. = 1.185 m)	5H+5H	
19	t = 2.2 mm [4 x M12 8.8] [Eff. Height. = 1.185 m)		5H+5H
20	t = 2.2 mm [4 x M12 8.8] [Eff. Height. = 1.185 m)	5H+5H	
21	t = 2.2 mm [4 x M12 8.8] [Eff. Height. = 1.185 m)		6H+5H
22	t = 2.2 mm [4 x M12 8.8] [Eff. Height. = 1.185 m)	6H+5H	

2 Struts/WS
26 x BASE PLATE TYPE FB MEDIUM
1 Anchor Bolts / Plate

2.4.1.2. LOADS ON VERTICAL WALLS: METHOD FOR SLENDER SILOS (EN 1991-4 5.2)

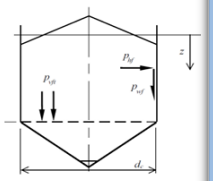
A.- SYMMETRICAL FILLING PRESSURES

The symmetrical filling load (for each depth z as per the reference system shown in the figure below) should be calculated using the following expressions:

Horizontal Pressure $p_{hf}(z) = p_{ho} \cdot Y_f(z)$

Frictional Pressure $p_{wf}(z) = \mu_w p_{hf}$

Vertical Pressure $p_{vf}(z) = p_{hf}/K$



With:

- Janssen pressure depth variation function $Y_f(z) = 1 - e^{-\frac{z}{z_o}}$
- Janssen characteristic depth $z_o = \frac{A}{\mu_w K U}$ (With A and U the area and the internal perimeter of the plan cross-section of the vertical segment of the silo)
- Asymptotic horizontal pressure at great depth due to stored particulate solid $p_{ho} = \gamma_s K z_o$

The resulting characteristic value of the vertical force (compressive) in the wall F_{wf} per unit length of perimeter after filling at any depth z should be determined as:

$$F_{wf} = \int_0^z p_{wf}(z)dz = \mu_w p_{ho}[z - z_o Y_f(z)]$$

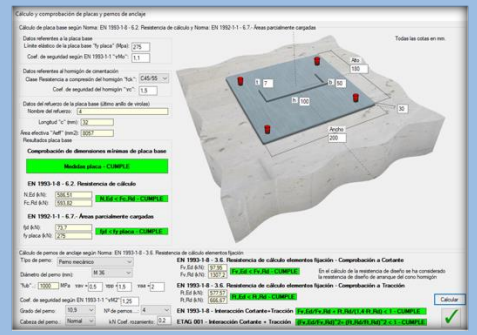
Note: The characteristic values (upper/lower) of the material properties K and μ_w to be adopted when calculating the symmetrical filling pressures should be those indicated in Section 2.4.1.1.

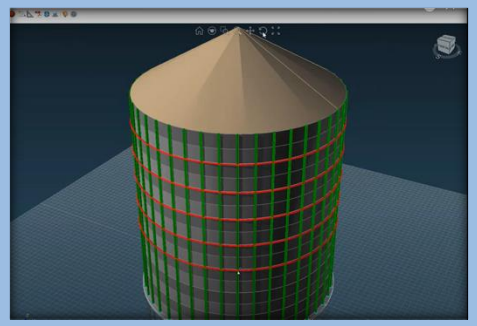
B.- FILLING PATCH LOAD

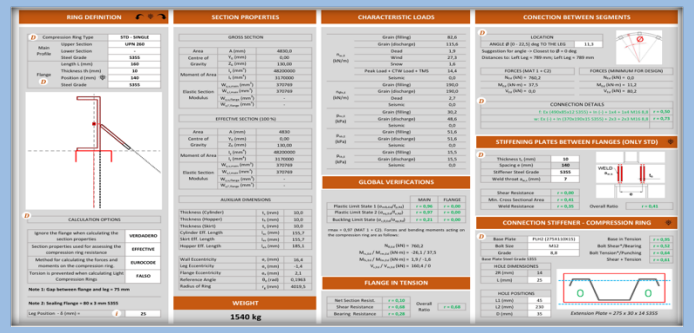
The filling patch load shall be used to represent accidental asymmetries of loading associated with eccentricities and imperfections in the filling process. For silos in AAC 2 and AAC 3, a local asymmetric horizontal pressure distribution (patch load) need to be added to the symmetrical filling pressure distribution. This load is applied at any depth z in the silo and the height of the zone on which the patch load is applied should be taken as s = 0.2d_c. The values of this asymmetric pressure distribution are determined as follows:

$p_{pf}(z) = C_{pf} p_{hf}(z)$ $\quad$ $p_{pfx}(z) = p_{pf}(z)cos\theta$

With: $C_{pf} = 0.21 C_{up}\left[1 - 2\left(\frac{2z_f}{d_c}\right)^2\right]\left[1 - e^{-1.5(h_c/d_c - 1)}\right]$







Generate your reports:

- Wall sheet and stiffener distribution
- Foundation loads
- Full calcualtion report
- Weigth by components and totals
- 3d lay out of the silo
- Costing reports
- Any other you might require
- Manufacturing references

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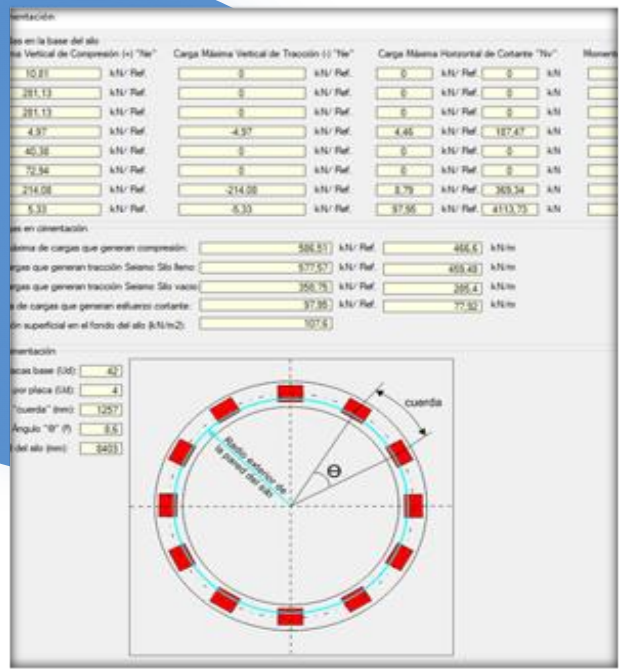
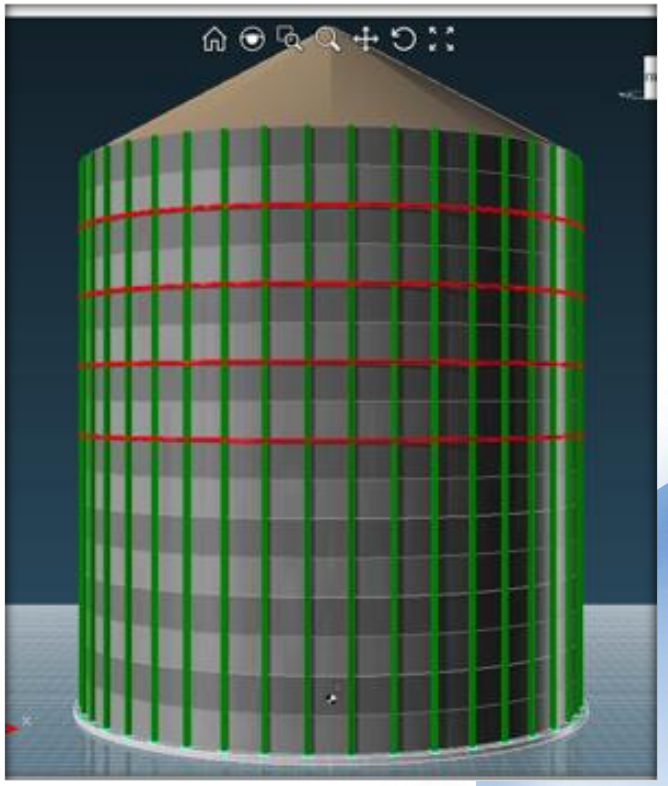
Your Benefits at a Glance

- Easy to configure tool
- Quick set up
- Update of standard norms
- Modify your components to check improvements in silo design
- Easily generate reports for authorities





- Quick turn around for new silo models
- No in deep norm knowledge required
- No costly self developments
- Proven tool
- No charge for updates during the first year

Why should you invest in YSS SILOS 3D?

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OPTIMIZE YOUR SILO DESIGN

Optimizing the silo design means reducing its weight, thereby enhancing your competitiveness

MANUFACTURED ACCORDING TO STANDARS

For the same silo model, one customer may ask us for European standards, and another for American standards, or Indian, etc... YSS Silos 3D calculates your silo based your needs

CALCULATION REPORTS

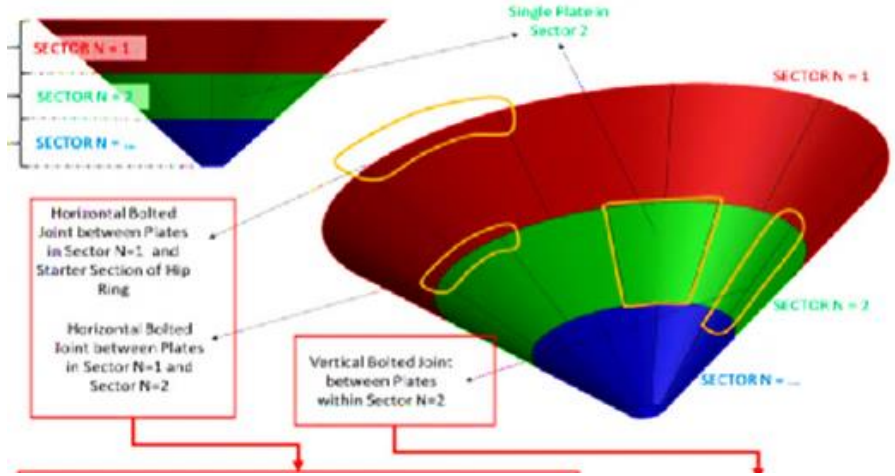
Nowadays, numerous clients are requesting calculation reports for insurance companies and others. Silos 3D will issue a calculation report for each of your generated models. Offer confidence to your customer.

DESIGN BASED ON NEED

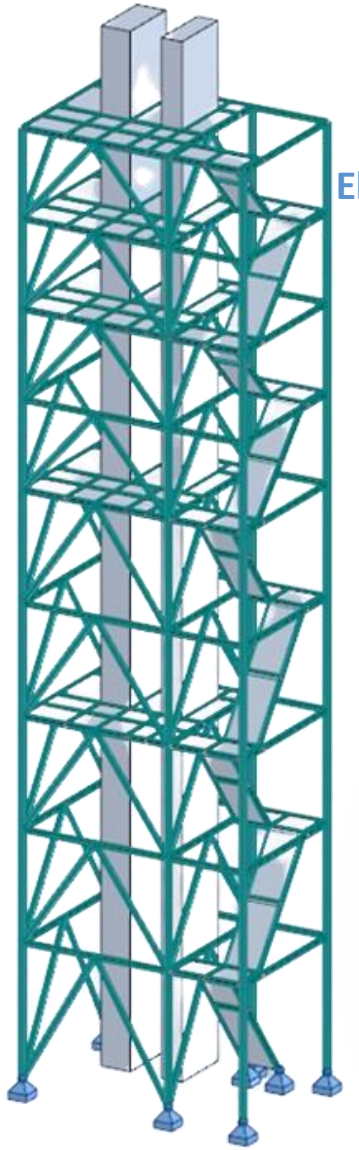
The same silo model sold to a customer in Japan is not the same silo sold to a customer in France, the risks of earthquakes, wind and snow loads will be different, which translates into different characteristics, which YSS Silos 3D calculates in a matter of seconds.

Other Engineering Tools and Services

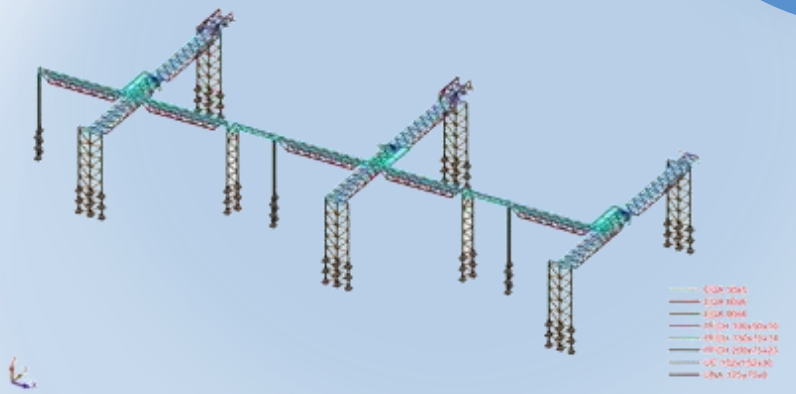
Silo Hopper design and calculation



Elevator tower calculation and design

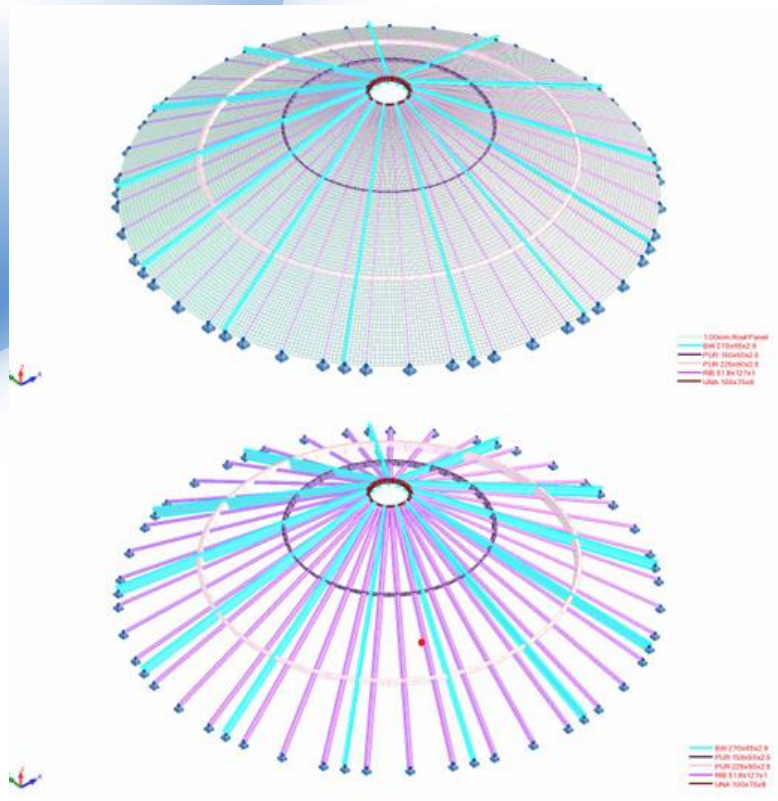


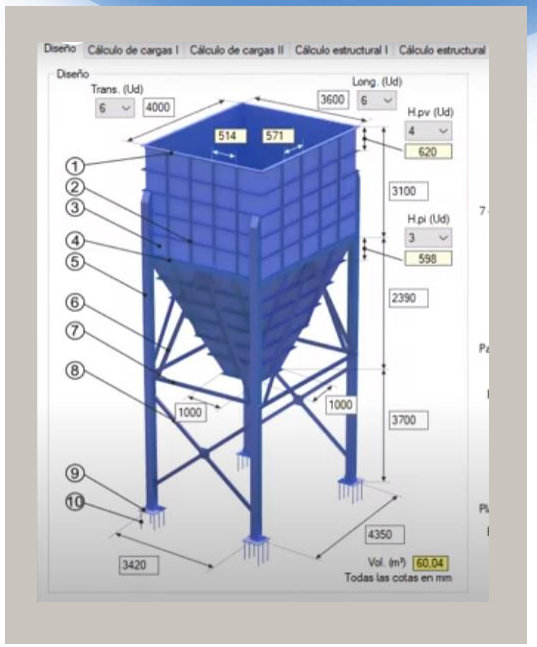
Catwalks and tower design and calculation



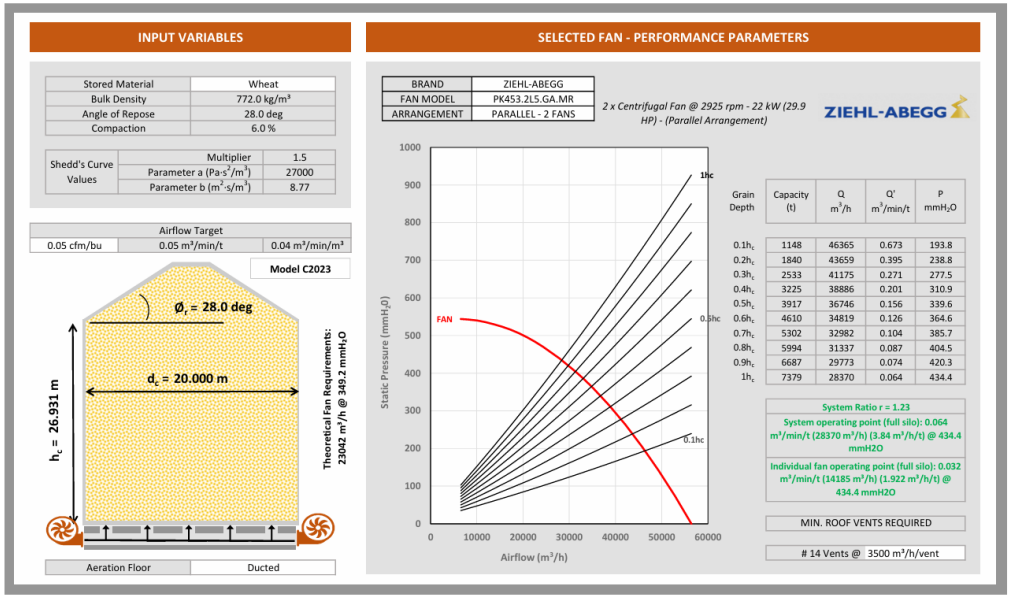
Other Engineering Tools and Services

Silo roof, calculation, design & redesign





Squares silos, pressure vessels and vertical tanks calculation software



Silo aeration calculation tools for different grains and types of fans

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