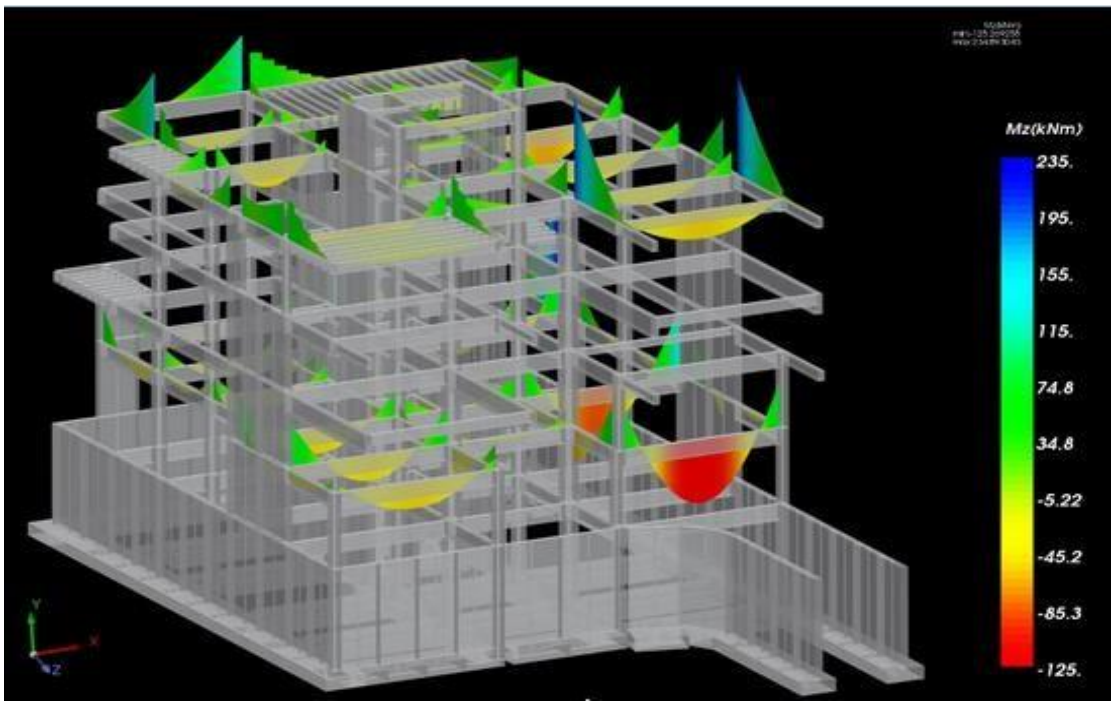
SCADA Pro 25tm
Structural Analysis & Design

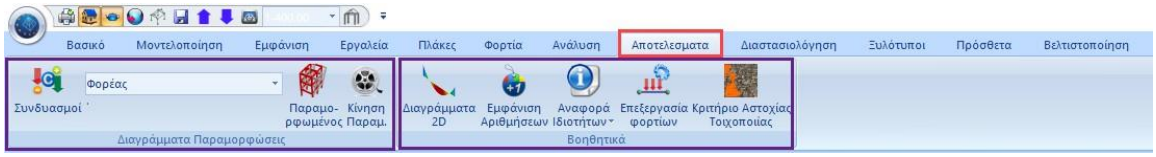
User Manual
9.RESULTS



ACE HELLAS
INTEGRATED SOLUTIONS

CONTENTS

Chapter 9: Results

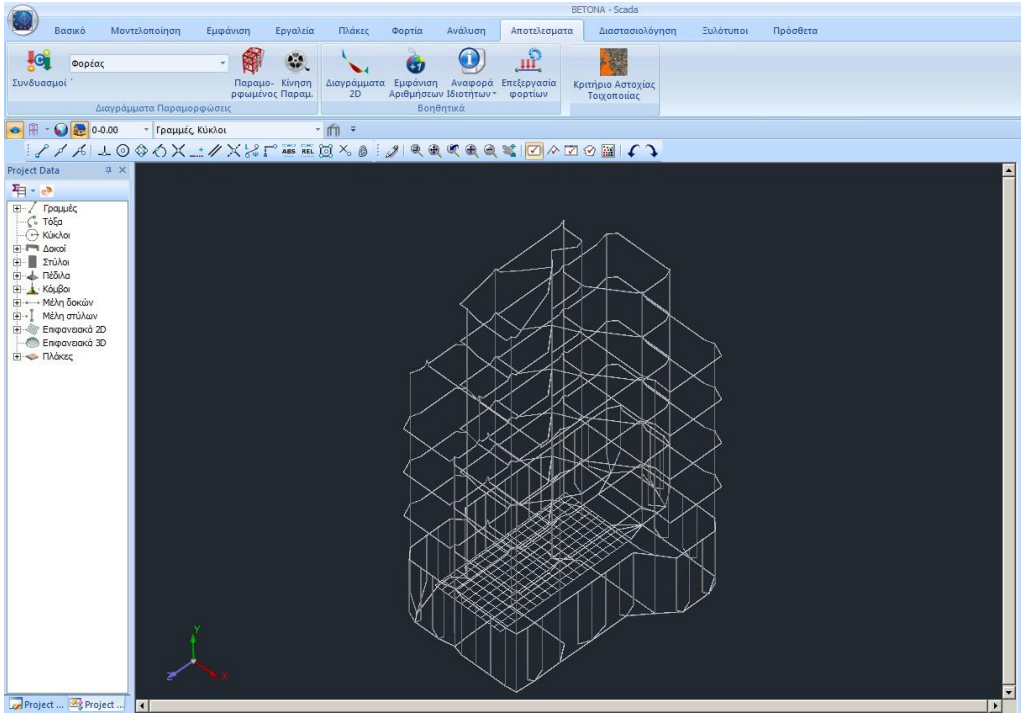


The 9th Section "RESULTS" and includes the following 2 groups of commands:

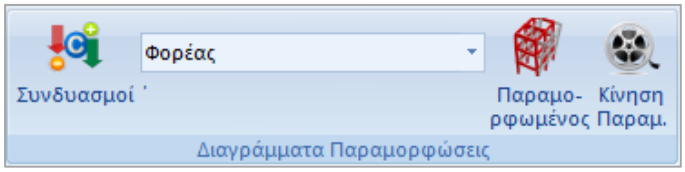
- √ Diagrams Deformations
- √ Helpful

After the completion of the analyses of the vector and the creation of the corresponding combinations, the "Results" section offers the user the supervision of the analysis results in the form of diagrams and deformations.

By selecting the "Results" section, the vector is converted to this format in 3D display.



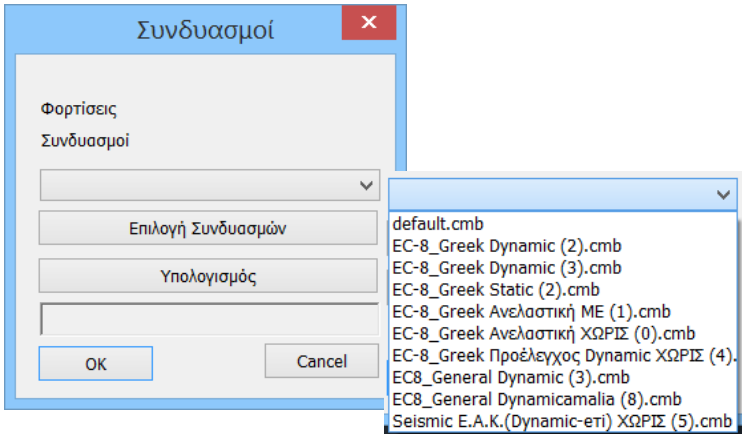
Diagrams Deformations



The commands of the "Deformation diagrams" group allow you to see the deformations of the beam from each load or combination under scale as well as the diagrams M,V,N for each member.

1.1 Combinations

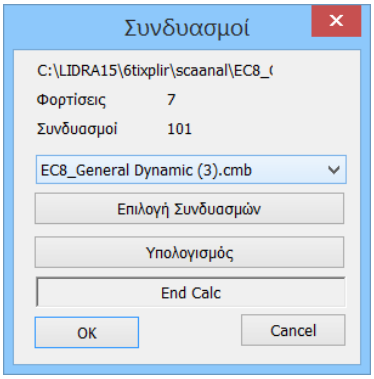
Depending on the results you want to see, from the "Combinations" command and within the dialog box:



- Select a combination from the list that includes the combinations of all the "running" analyses, and let them complete their calculation automatically, or

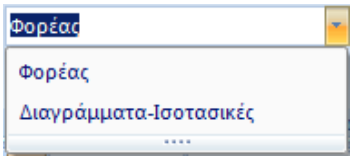
- Press the "Select File" button, select the file of combinations from study folder and press the "Calculate" button.

OBSERVATION:
To view vector deformations from eigenmodes of the dynamic analysis, select Dynamic analysis combination file.



1.2 List

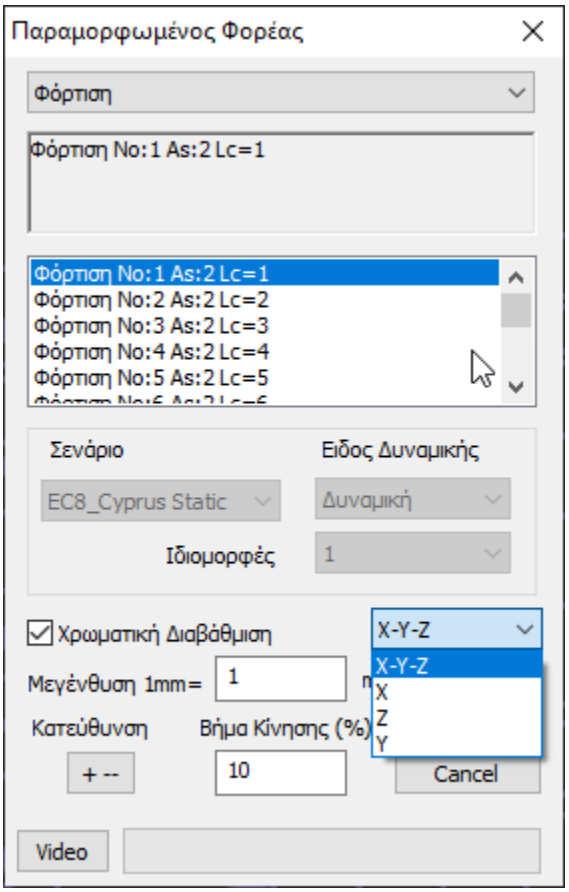
includes "Institution" and "Charts-Issues",

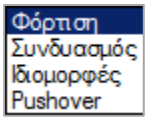


Depending on the results you want to see, you select:
-Actor or
-Diagrams-Important

Depending on the selection, you combine the commands:

1.3 Body+ "Deformed Body"



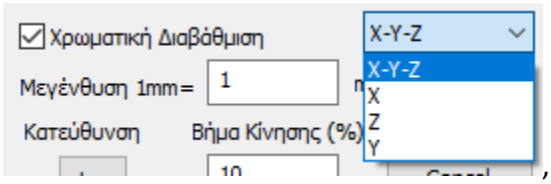


Select from the list the general cause of the deformation and from the next list, the specific cause.

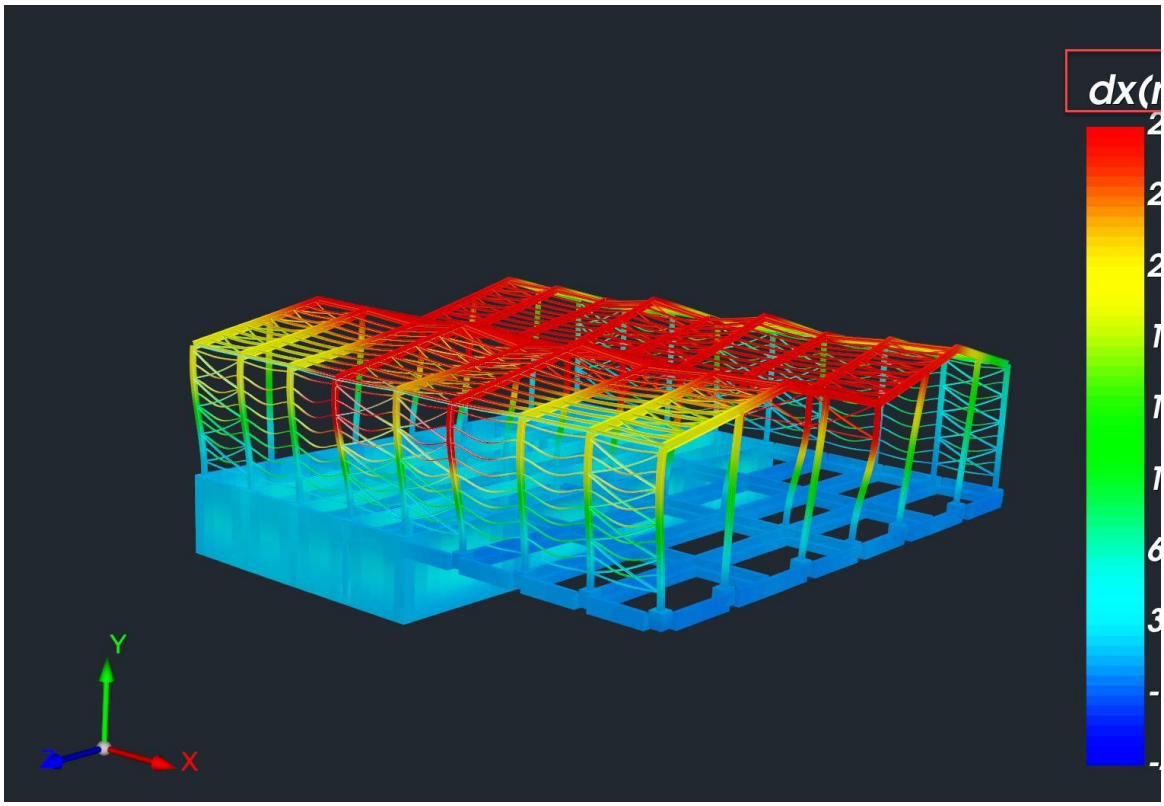
Modify the "Scale" and "Motion Step" to get the best visualization.

The "AVI" button allows you to record a short video of the vector's deformation.

Activate

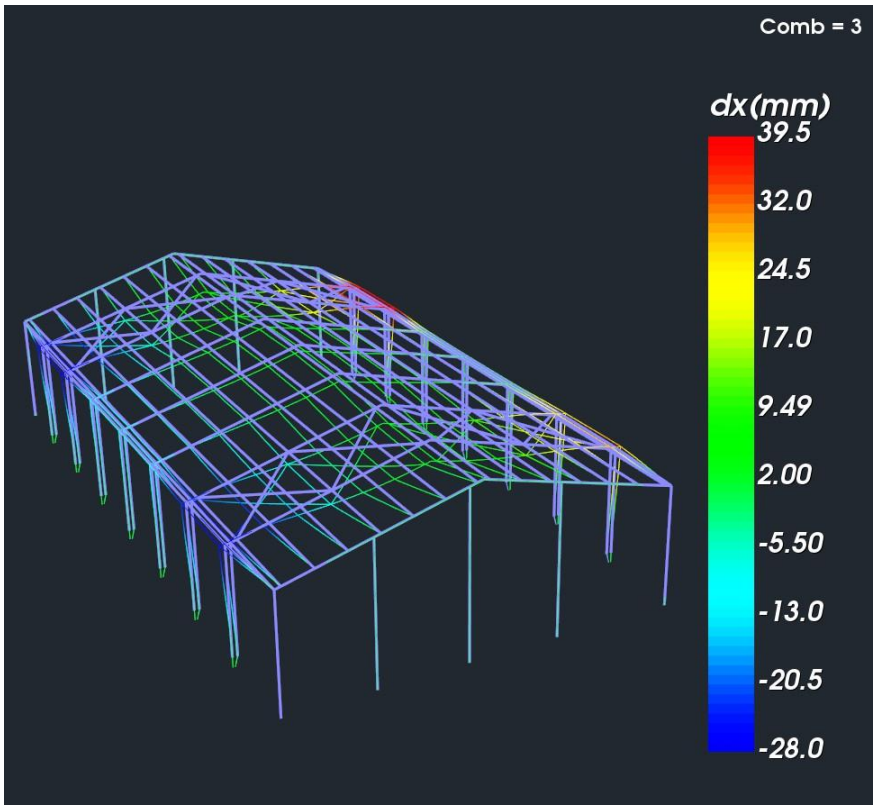


In the new version of the program, the possibility of displaying the colour gradation of the deformed carrier and per address, with simultaneous display of the selected charge or combination.



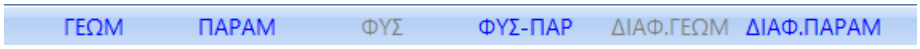
For example, the above picture shows the X deformations from combination 3.

It is now possible to display the distortion values based on the colour gradation.

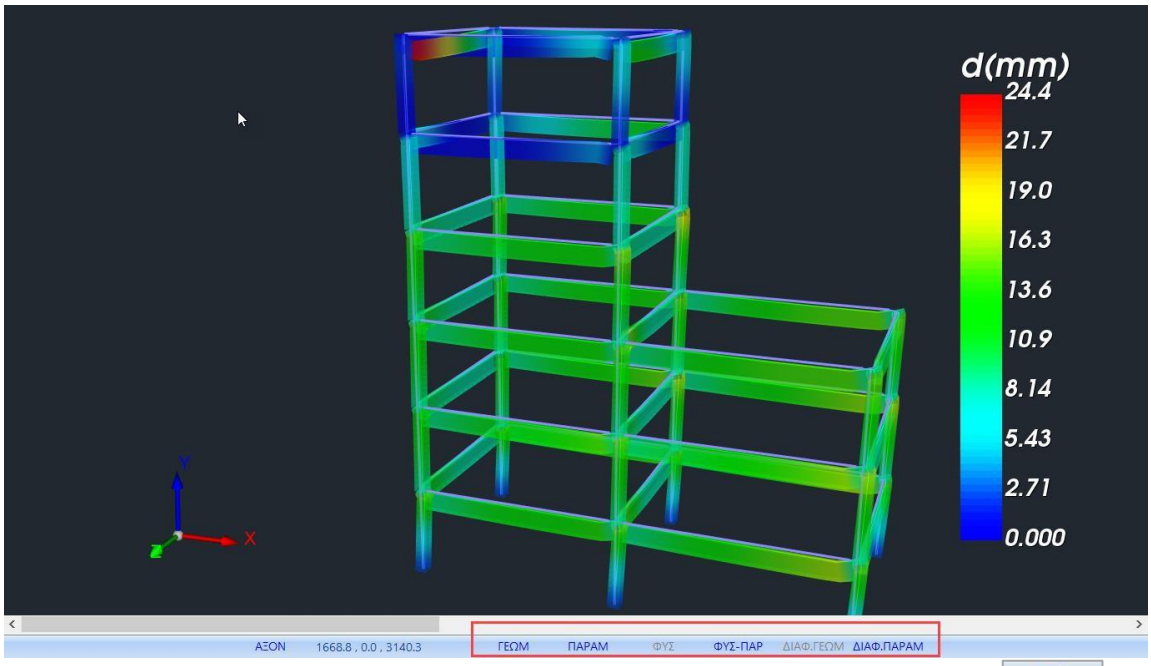


The "Deformed Vector" window remains on the screen waiting for the next selection of the cause of the deformation, so that you have a visual continuity. To close the window select Cancel.

In the "Status bar" select (double click, blue=active, grey=inactive) the way to display the



deformed vector.



Depending on the combinations you have initially selected, through the command 

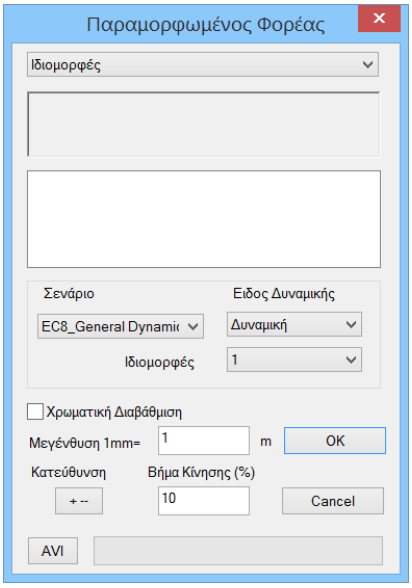
, you will be able to see the corresponding results.

EXAMPLE:

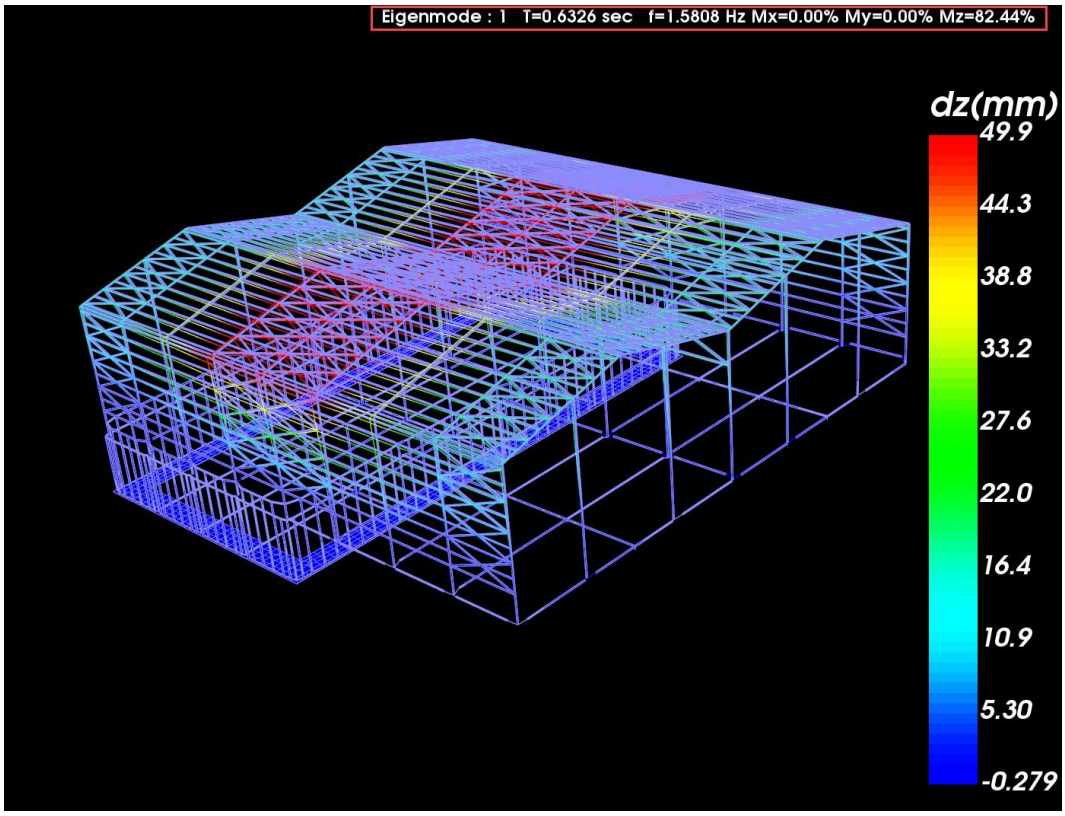
For example, if you open Statics combinations you will not be able to see deformations from eigenvalues as opposed to opening Dynamics combinations.

In a vector where you have performed simplified spectral analysis you can see diagrams and deformations from each load or combination. But when you have performed dynamic analysis you can only see deformations from eigenmodes.

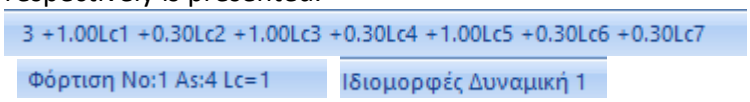
Select "Idioms" and the "Scenario" field is automatically activatedwhere you select Scenario, Dynamic Type and Idiom number.



In the display of the deformed vector by selecting an eigenmode, the data of the eigenmode such as the eigenperiod (T), the cyclic frequency (f) and the mass percentages per direction that have been activated are now displayed at the top of the screen.

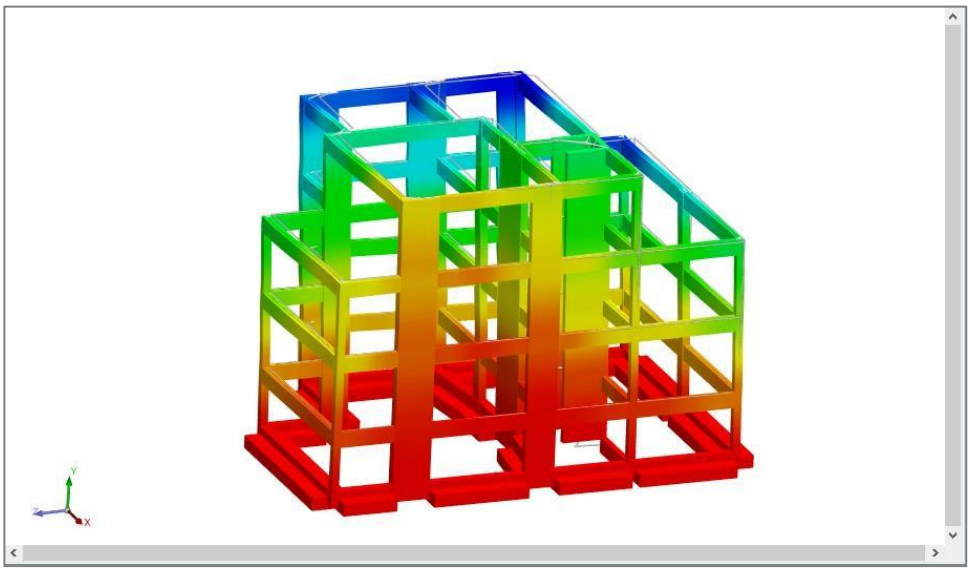


Finally, at the bottom left of the screen, information about the scenario, charge or combination respectively is presented.



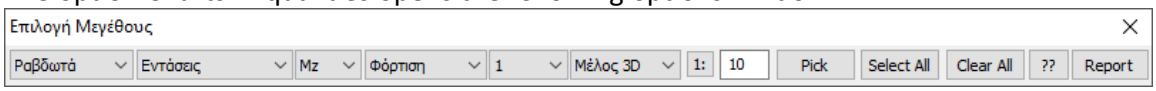
1.4 Body+ "Deformed Body Movement"

The "Motion" command is the switch that turns on and off the motion of the deformed carrier, according to the choices you made in the dialog box of the previous command, "Deformed Carrier".



1.5 Charts - Equalisation Διαγράμματα-Ισοτασικές

The option Charts - Equalities opens the following options window:

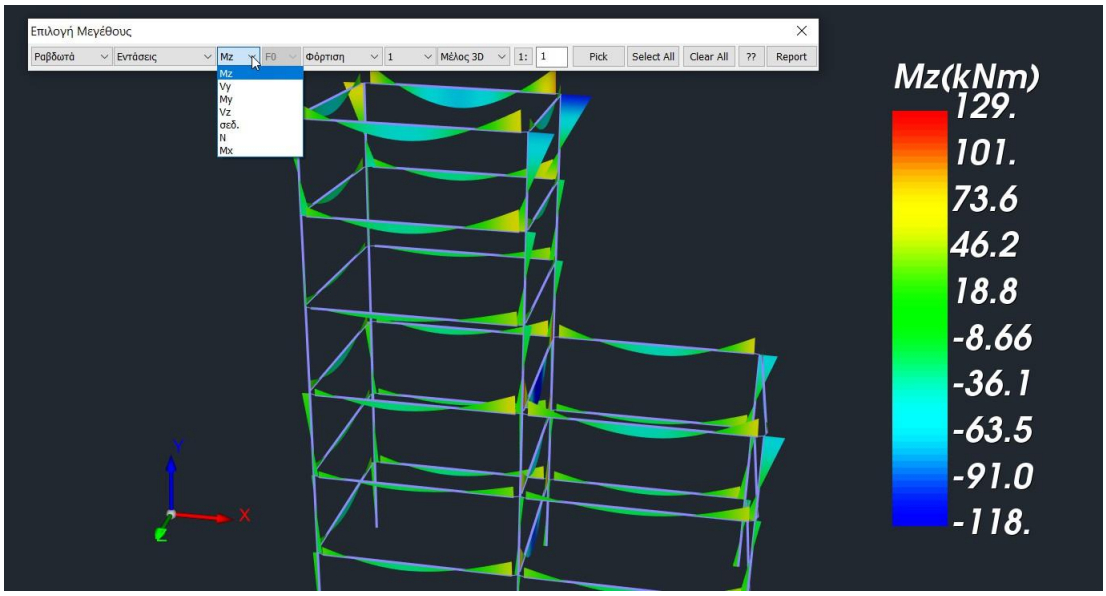


1.5.1 Stick

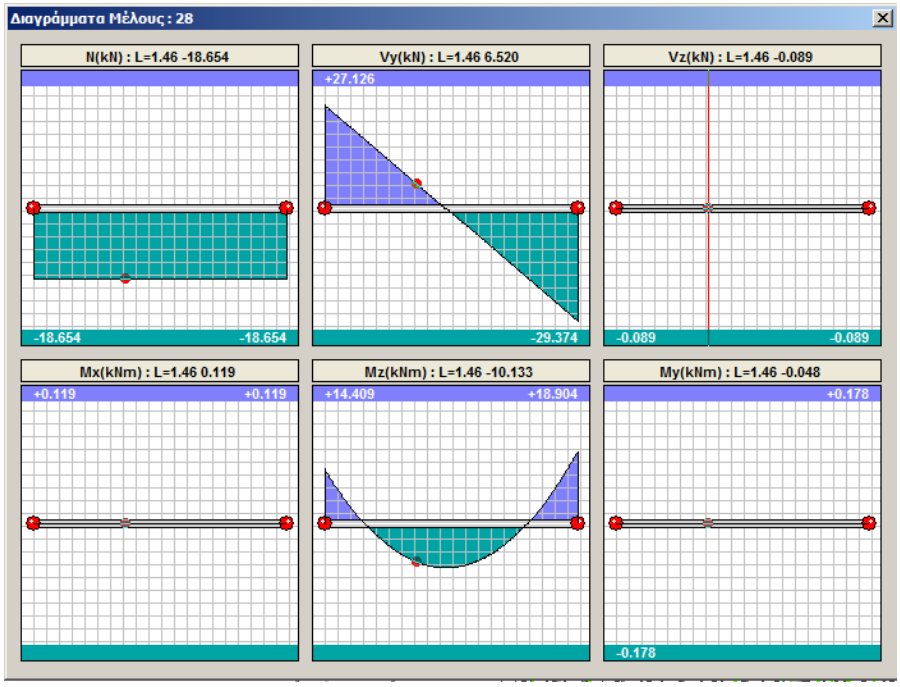
- For the Rivadota Ραβδωτά / Επιφανειακά / Solid data you can see:

tensions Mz / Vy / My / Vz / σεδ. / N / Mx, for each Φόρτιση / Συνδυασμός, over at Μέλος 3D / Μέλος 2D / Περασιάς / Εσχάρας / Πλαισίου, with

scale.



Changing the frame option to "2D Member" to see all 6 intensive sizes of a member gathered in one window. In fact while moving the mouse you will be able to see along the member the values of each intensity.

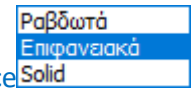


The diagrams are plotted according to the local axes of the member.

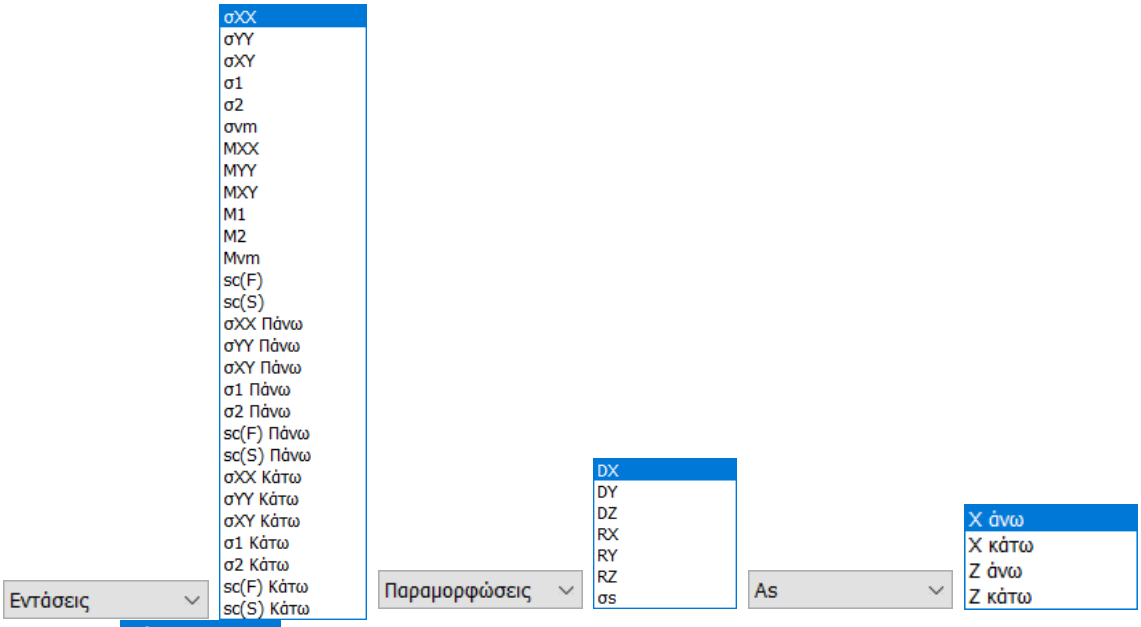
OBSERVATION:

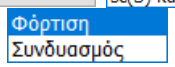
⚠ *The axial is marked in the opposite direction to the general view, which is why you will see compression with a positive sign and tension with a negative sign.*

1.5.2 Surface

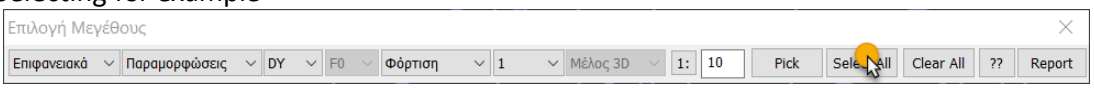
- For the Surface 

data you can see:

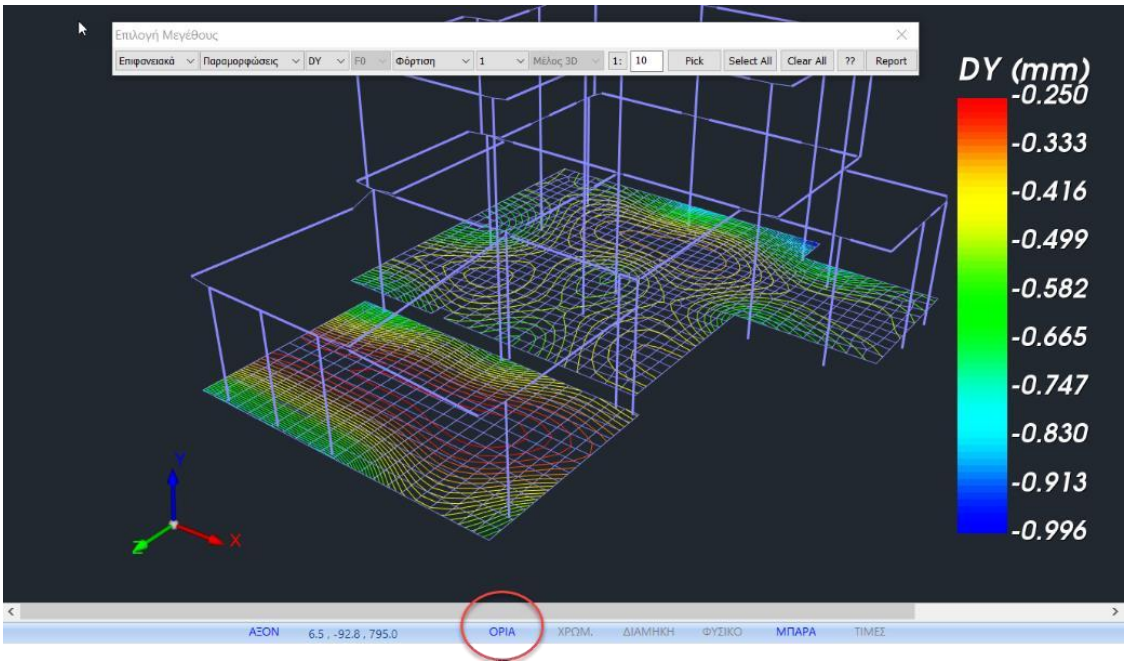


for each 

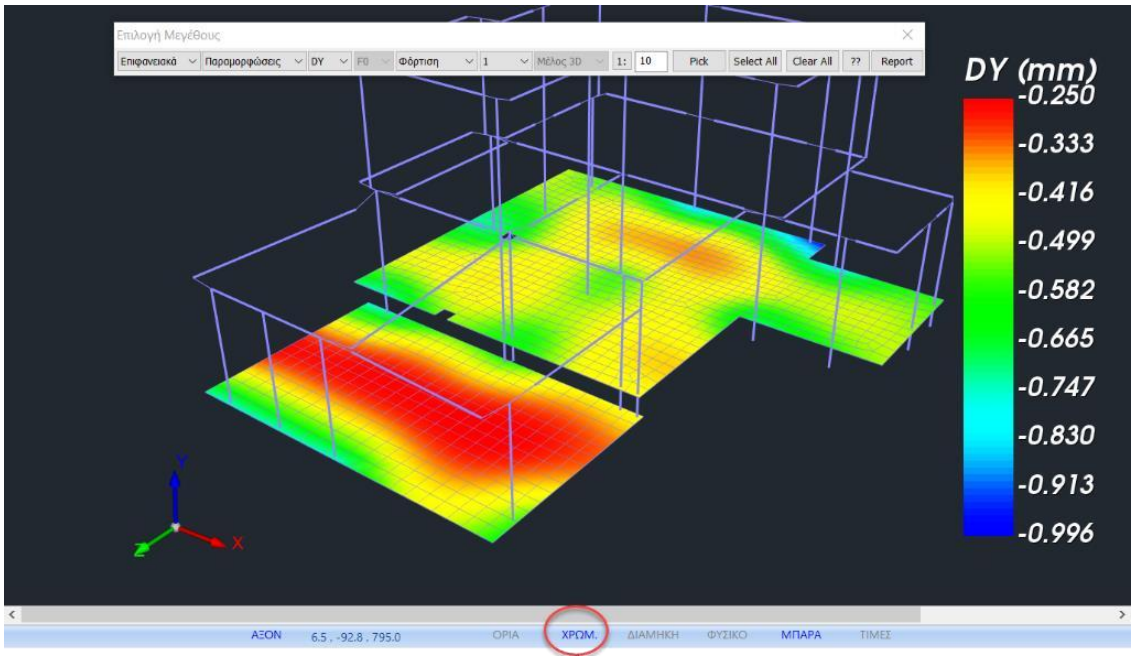
Selecting for example



- And in the lower horizontal bar, selected BORDERS and BARS:

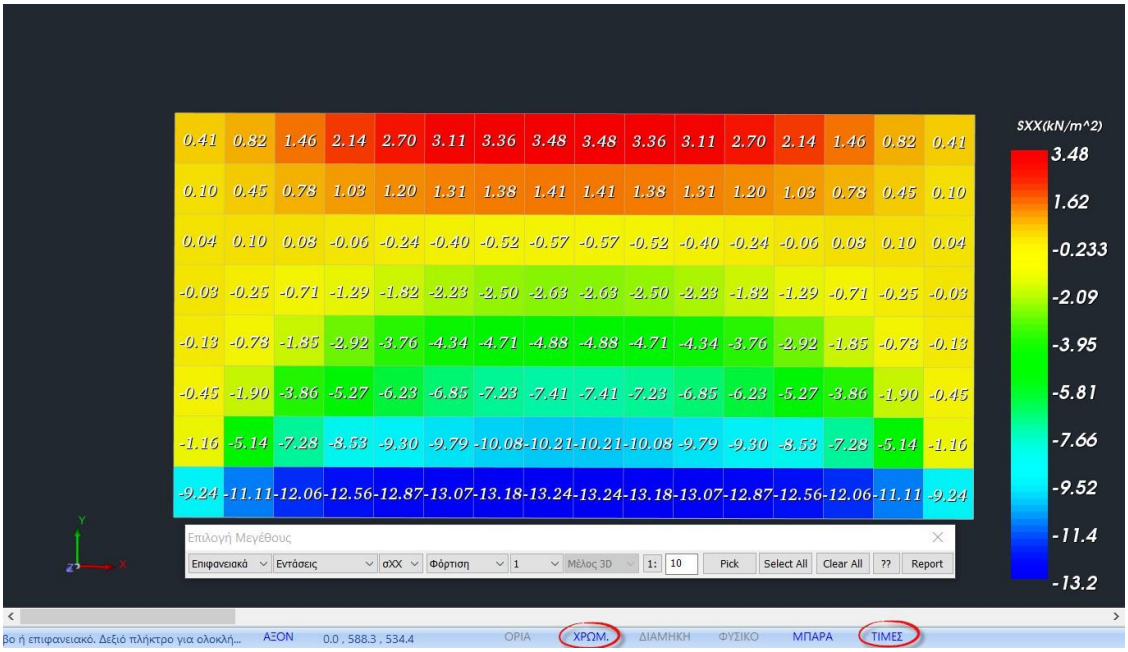


- And in the bottom horizontal bar, selected COLOUR and BALANCE:

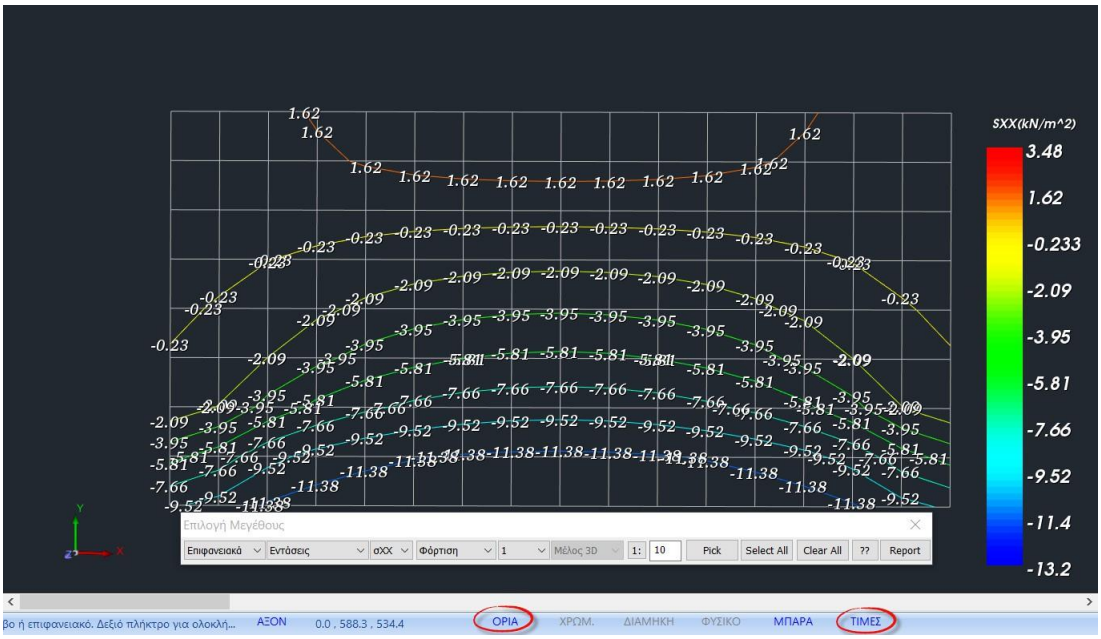


We see the above illustrations.

- By activating the PRICES in the lower horizontal bar, you can see the values of the selected size within the surface of the surface element,

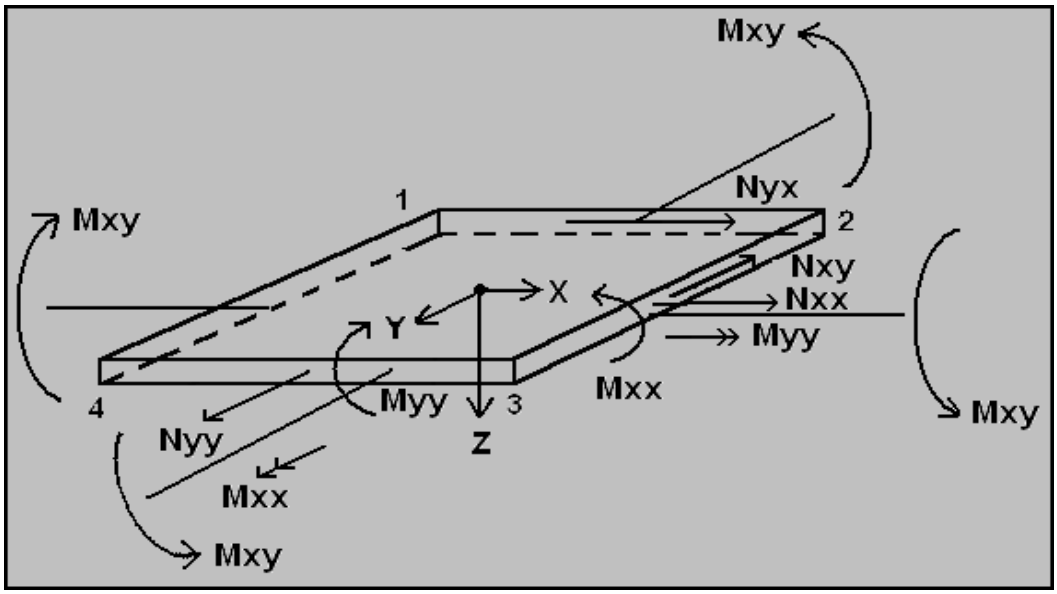


as well as the value of the isovalue on them



1.5.2.1 Important observations:

⚠ Clarification on the folds and reinforcements in the finite surface elements:



- Regarding the **intensive sizes**:

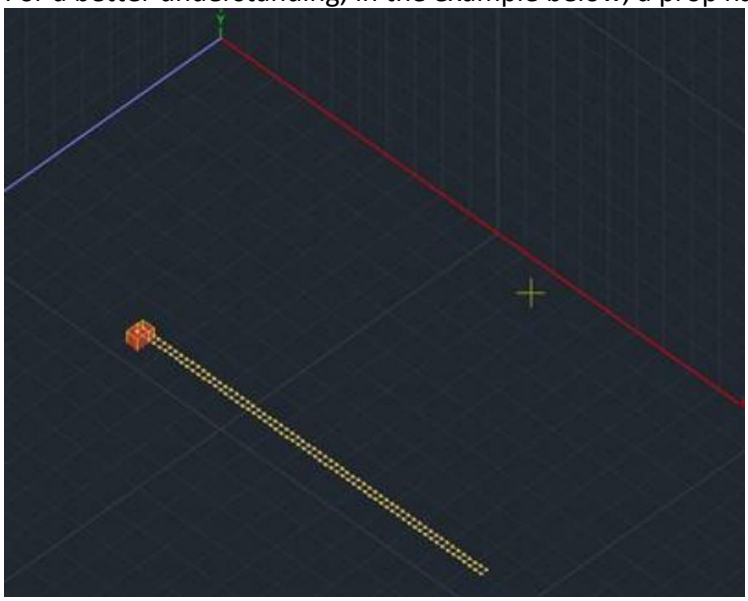
These sizes refer to the **local system of** the element which is also shown in the image and are listed in the out file.

Attention must be paid here to the torques.

- **Mxx** is the torque about the local **y-axis** and
- **Myy** is the torque about the local **x-axis**.

EXAMPLE:

For a better understanding, in the example below, a prop has been introduced.



- The **local** axis **x** coincides with **the universal X**.

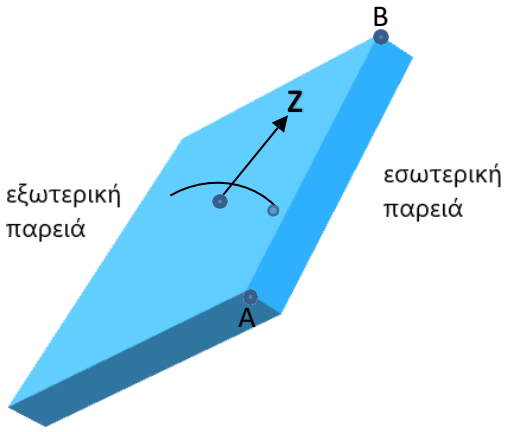
Therefore, in the out file we expect the large moments to be seen <u>about the local axis y, and therefore the moments Mxx</u>.

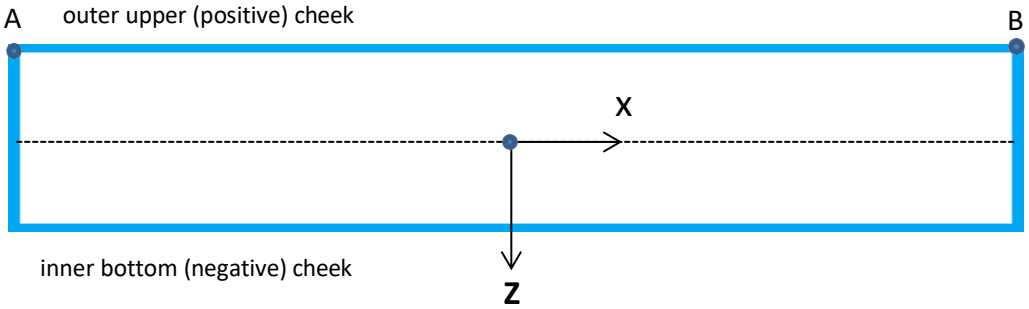
So let's go to the results and display the Mxx moments:

While the corresponding Myy moments are clearly much lower:

- Regarding **the armaments**:

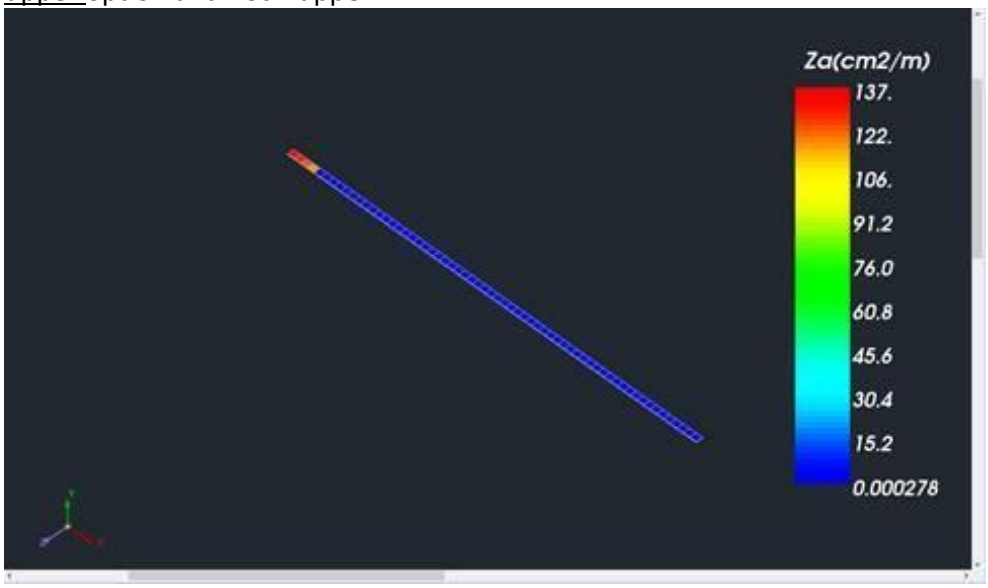
The figure below explains schematically what is considered in SCADA Pro positive (upper) and negative (lower) side of the surface element with the help of the right hand rule.





- **Above** the surface is the **BEGINNING** point of the **local z**.

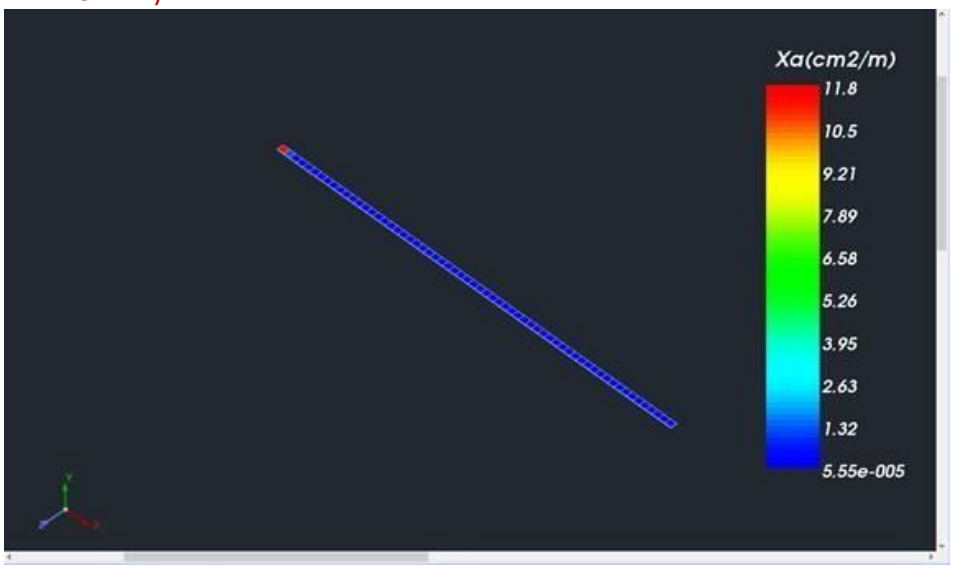
Of course on the prop I expect to see more upper armament and - CAUTION - on the z upper option and not x upper.



It is clarified that the **armature:**

- now refers to the **universal axes** and
- *the mounting address is **RIGHT** on the corresponding axis we are referring to***

(**NOTE: FROM SCADA Pro20 Build:2020.1.2.2432 AND AFTER THIS RELEASE NOT APPLICABLE)



For **vertical surfaces:**

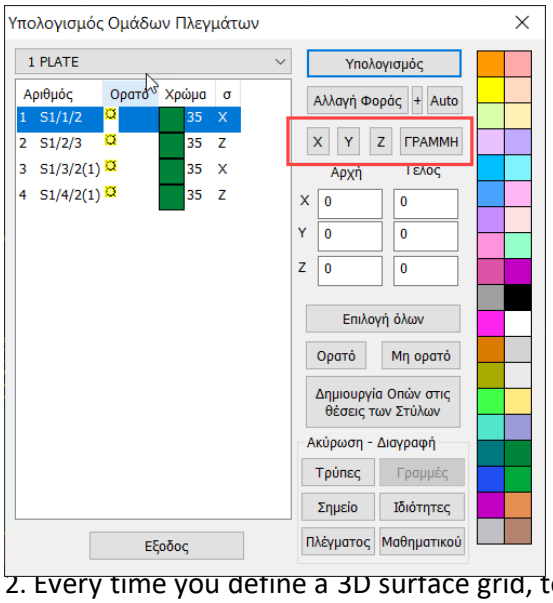
X: is the reinforcement perpendicular to the local x

Z: is the reinforcement perpendicular to the local y

OBSERVATION:

⚠ Prerequisite:

1. preceded by the determination of the main direction of reinforcement, is the determination of the direction for the vertical grids.



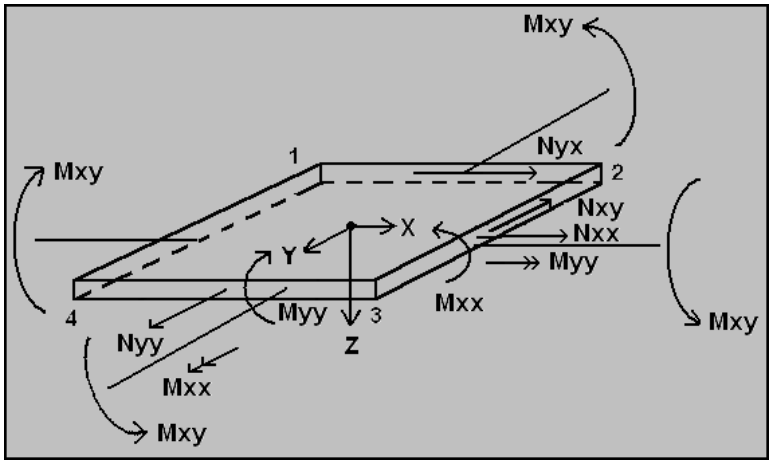
-*For* vertical grids // on the X-axis : I select the grid and from the list and the column ''s'' is updated, respectively,

-For vertical grids // on the axle G : select the grid and the from the list and the column ''s'' is updated, respectively. For meshes that are not // on either X or Z if I do nothing the program will project resulting armature by reducing it to the 2 main axes.

2. Every time you define a 3D surface grid, to automatically redefine the correct direction of the surface elements, you ALWAYS select the use of the "**Auto**" command

& MODIFICATIONS - IMPROVEMENTS (SCADA Pro20 version) Build:2020.1.2.2432)

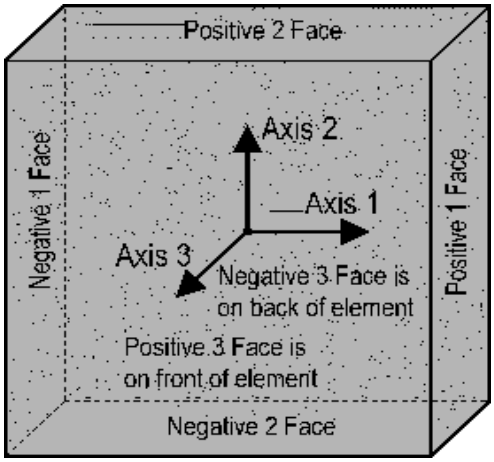
1. The program now takes into account the overlap given by the user when entering the meshes.
2. Recall the times of the intensive



Mxx is the torque FOR axis YY and the torque Myy FOR axis XX.

3. We introduced in SCADA Pro the SAP method to get comparable results.

The contract for SAP torques is the same as for SCADA Pro:



It calls them M11 and M22 and states

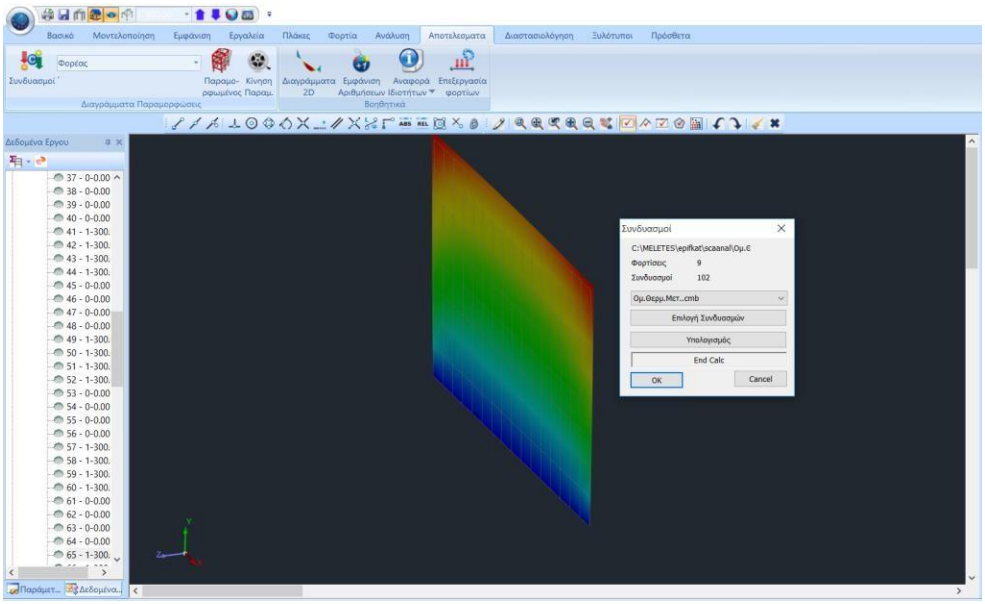
- **M11:** Direct moment per unit length acting at the mid-surface of the element on the positive and negative 1 faces *about the 2-axis*.
- **M22:** Direct moment per unit length acting at the mid-surface of the element on the positive and negative 2 faces *about the 1-axis*.

4. The major change made in SCADA Pro is regarding the contract for the reinforcement placement direction. Up until now we have been saying that the placement direction is vertical on the respective axis we are referring to. FROM NOW THE REINFORCEMENT DIRECTION IS **PARALLEL TO** THE CORRESPONDING AXIS WE ARE REFERRING TO. SO WHEN WE SAY X-AXIS WE MEAN NO MORE ARMATURE PARALLEL TO THE X-AXIS OR TO CORRESPONDING AXIS WE HAVE REVERSED OUR LOCAL X-AXIS.

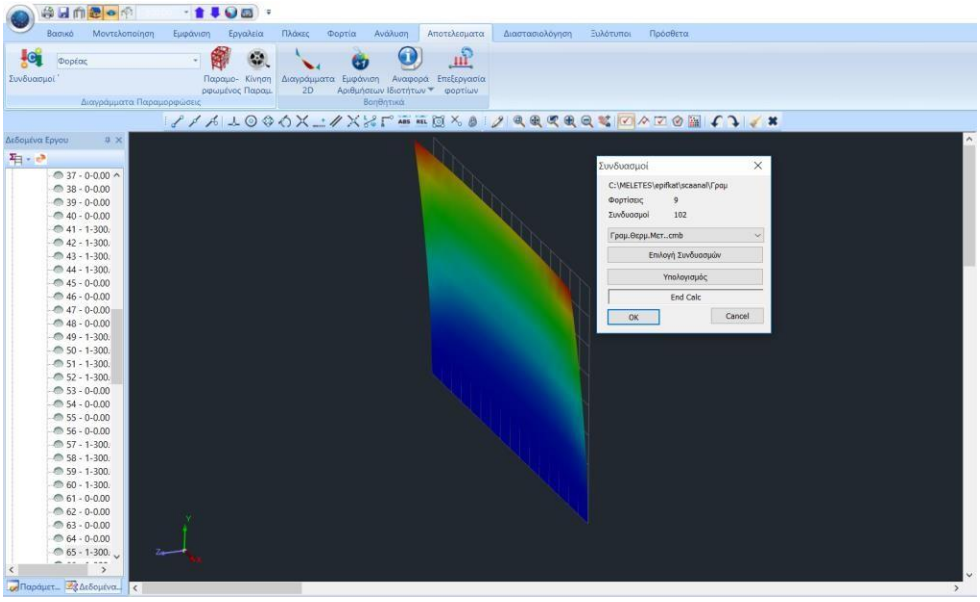
1.5.2.2 Temperature change:

In addition, for the Plate (shell) elements a load of Uniform Temperature Variation and/or a load of Linear Temperature Variation has been applied.

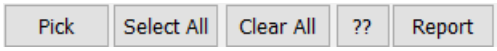
- The **Uniform Temperature Change** causes membrane deformation within plane of the element, while



- The **Linear Temperature Change** causes bending deformation.



1.5.2.3 Choice of elements

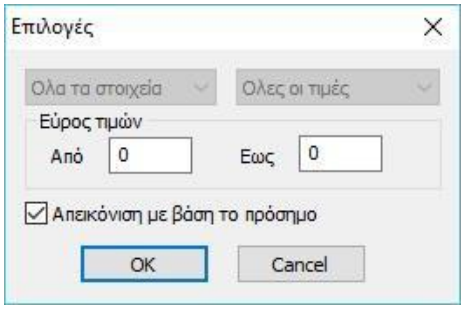


The selection of the elements for the display of the results is done

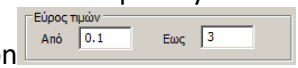
- selectively with "Pick" and left click on the items
- altogether with "Select All" and automatic display of all
- with filters with "Select All" and display of charts based on some filters.

- For Striped items you have the options to display:

diagrams in the members according to their type (Beams, Columns or all together) and with criterion of min and max as well as based on a range of values.
By selecting the button, the following dialog box appears where, from the first list you can select the type of item to display the charts and from the second list you can select :

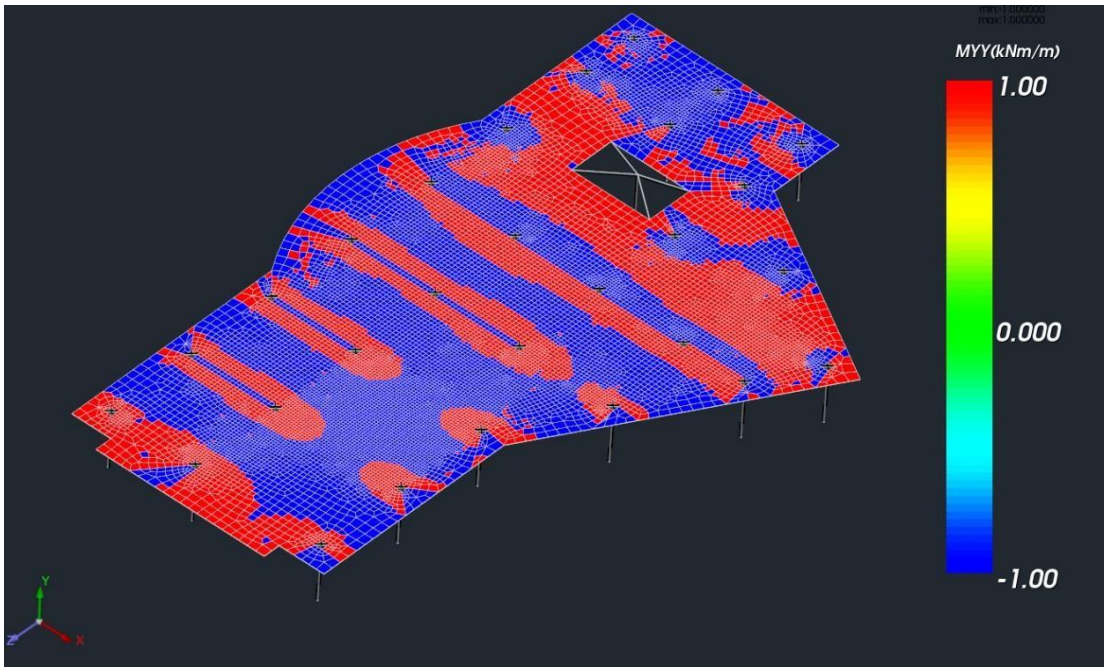


- "All values" : Displays the charts on all items regardless of values.
- "Min-Max" : Displays charts on those elements that have the maximum and minimum value for the given intensive size.
- "Range of values" : With this option you must enter in the fields included

in the "Range of valuessection 

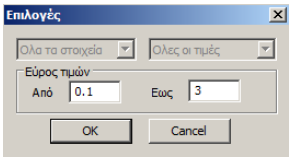
two values based on which the program will display charts on those elements whose value is included in this range.

In addition, the option "**Display by sign**" has been added. By selecting it, the corresponding magnitude that I have chosen to display its isosceles is displayed in color not with its range of values but is displayed with two colors one for negative values and one for positive values, as shown in the image below:

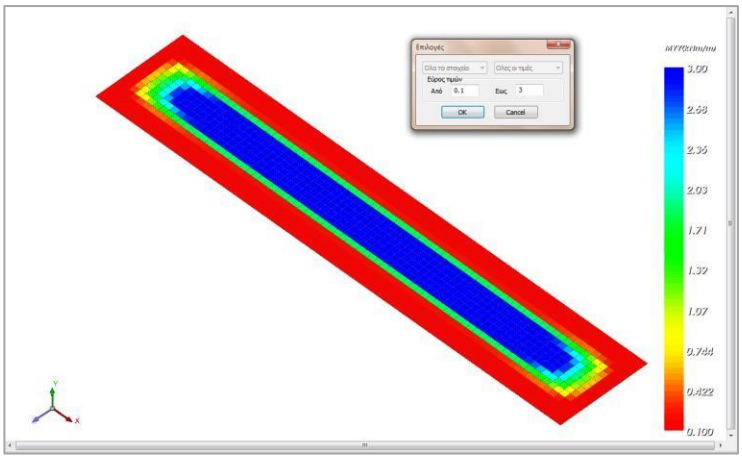


The option works for all sizes and for all elements (linear and finite surface)

- For Surface elements the command only works with the value range.

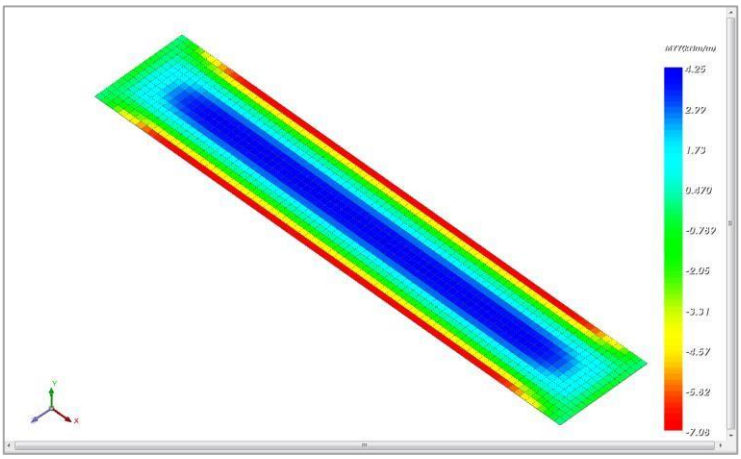


For example, setting the range of values shown in the figure above for the torque Myy shows the following isometric values:



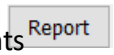
The part of the surface whose values are less than or equal to 0.1 kNm/m is shown in red (the lower colour of the colour gradient) and the parts whose values are close to 3 kNm/m are shown in blue (the upper colour of the colour gradient).

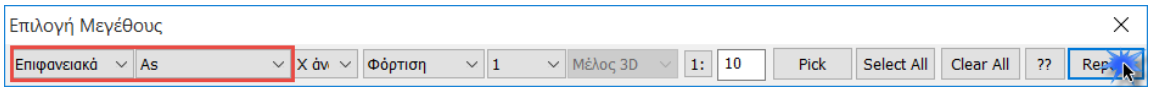
The corresponding picture without a fixed range is shown below:



Note that the colour scale is always fixed with the three primary colours in ascending order: red, green and blue (RGB).

1.5.3 Report

Concerns the reinforcement of surface elements 



and choosing it,
displays for each surface element:

- the worst As,
- the combination from which it results, and
- the corresponding intensive quantities.

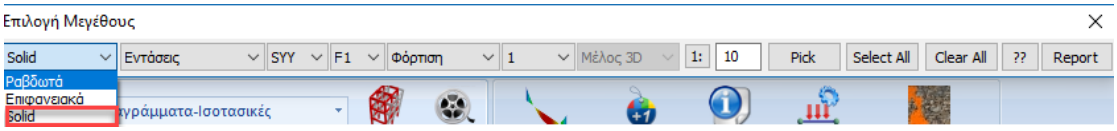
Calc_As.txt - Notepad

File Edit Format View Help

Name	Comb.	As(cm2/m)	Mx(kNm/m)	My(kNm/m)	Mxy(kNm/m)	Nx(kN)	Ny(kN)
1	1	0.002	-10.786	-4.891	-8.110	0.206	-2.309
2	-1	0.000	0.000	0.000	0.000	0.000	0.000
3	-1	0.000	0.000	0.000	0.000	0.000	0.000
4	-1	0.000	0.000	0.000	0.000	0.000	0.000
5	-1	0.000	0.000	0.000	0.000	0.000	0.000
6	-1	0.000	0.000	0.000	0.000	0.000	0.000
7	-1	0.000	0.000	0.000	0.000	0.000	0.000
8	-1	0.000	0.000	0.000	0.000	0.000	0.000
9	1	0.004	-30.956	-1.791	-10.160	0.408	-2.291
10	1	0.002	-31.269	-4.649	-17.166	0.226	-6.865
11	1	0.001	-33.164	-5.198	-24.971	0.050	-11.454
12	1	0.001	-37.101	-3.219	-33.757	-0.123	-16.095
13	1	0.002	-44.058	2.105	-42.549	-0.392	-20.869
14	1	0.005	-56.334	12.425	-49.352	-0.952	-25.856
15	1	0.014	-78.067	29.631	-48.256	-2.570	-30.990
16	1	0.788	-101.377	42.971	-24.980	-5.555	-35.047
17	1	0.008	-49.163	-0.141	-10.513	0.732	-2.336
18	1	0.004	-50.587	-0.714	-15.894	0.390	-7.018
19	1	0.000	-53.798	-0.373	-21.803	0.040	-11.740
20	1	0.002	-59.536	1.347	-28.024	-0.357	-16.522
21	1	0.005	-68.643	4.768	-33.109	-0.927	-21.354
22	1	0.010	-82.176	9.588	-34.696	-1.930	-26.161
23	1	0.082	-100.042	12.975	-28.847	-3.642	-30.662
24	1	0.033	-116.152	0.647	-11.913	-6.029	-34.782
25	1	0.011	-65.003	0.798	-9.646	1.069	-2.359
26	1	0.005	-67.274	1.692	-13.621	0.513	-7.103
27	1	0.000	-71.291	2.419	-17.671	-0.029	-11.886
28	1	0.004	-77.645	3.245	-21.482	-0.645	-16.688
29	1	0.008	-86.696	3.967	-23.682	-1.462	-21.461

1.5.3 SOLID

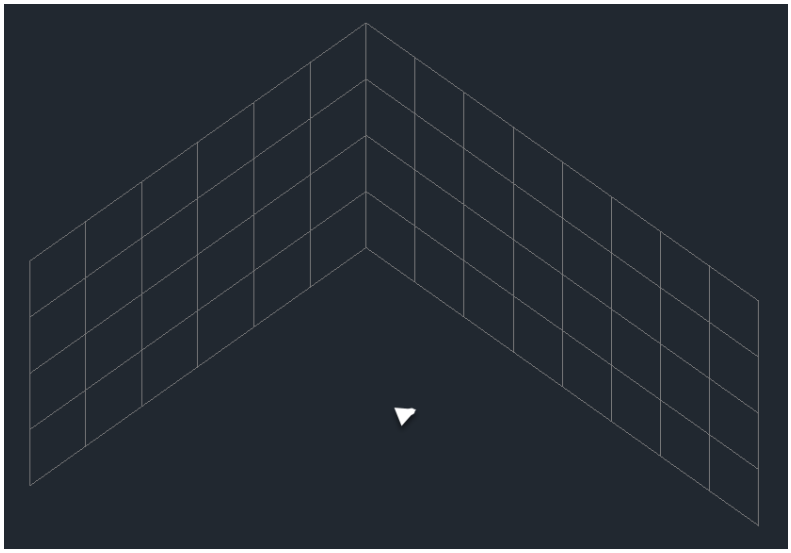
In the Post Processor, a new option has been added



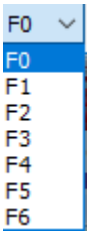
where from the drop down menu of trends we select the trend we want to see the isosceles and then the face  on which I want to see them.

To clarify that:

- The model is still loaded as with the other surface models, in "wire" form with the single meshes.

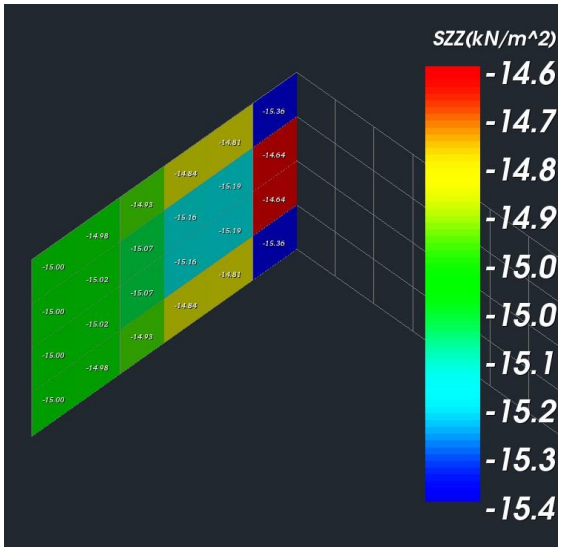


- The grids we see are the initials generated on the contours we selected.
- But we have the possibility to see my 6 trends in any face we choose from the bar.

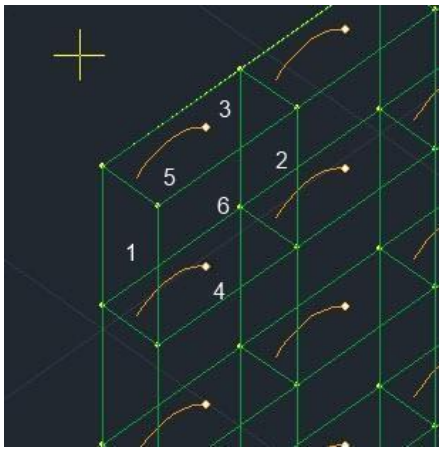


- The appearance is always made in a grid but each time it represents the face you have chosen.
- The number after F(ace) represents the point (0 centroid and 6 centres of faces) listed in the OUT file.

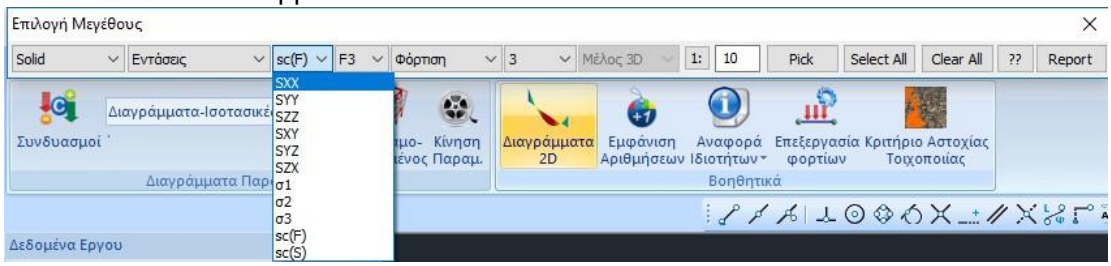
In the example below



σzz (*i.e. the voltage parallel to the universal Z*) was chosen to appear in face 0,
i.e. in the intermediate plane between the two sides of the wall.
The face we need to choose to see the pzz's on our original surface (the generator) is according to our shape and since the wall was created from the inside, face 5.



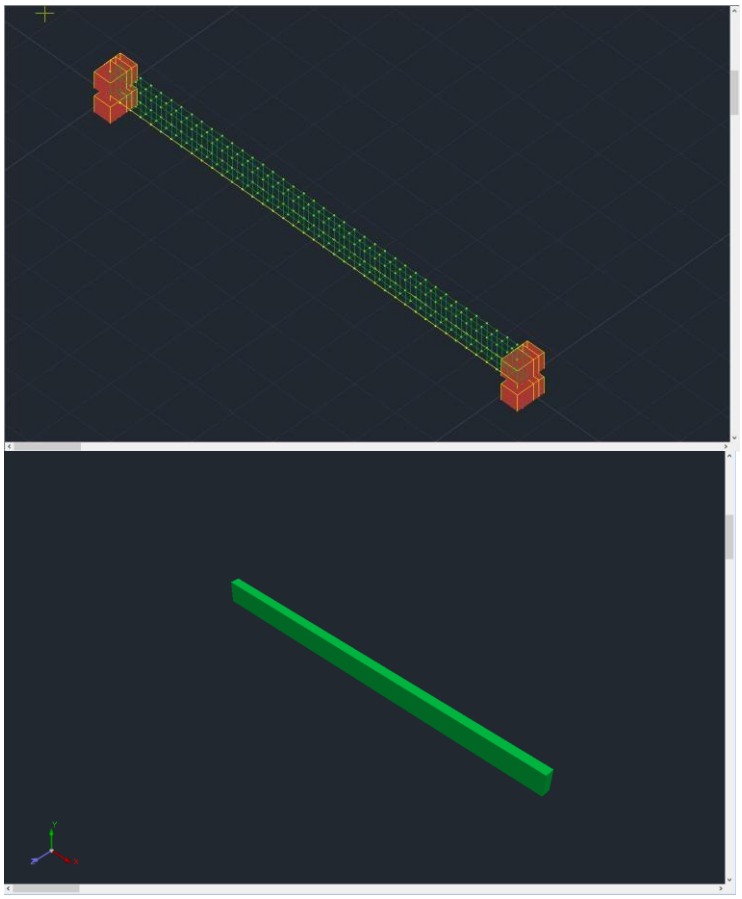
From the menu that appears



you can choose one of the 6 correct voltages or one of the 3 main voltages σ1, σ2 and σ3.

EXAMPLE:

For monitoring and verification of the stresses given by the solids per face, a two-piece beam of length 10 and cross-section 25x60 with solid surfaces 60 cm thick and 25 cm wide (2 elements of 12.5 cm each) was simulated.



The upper face

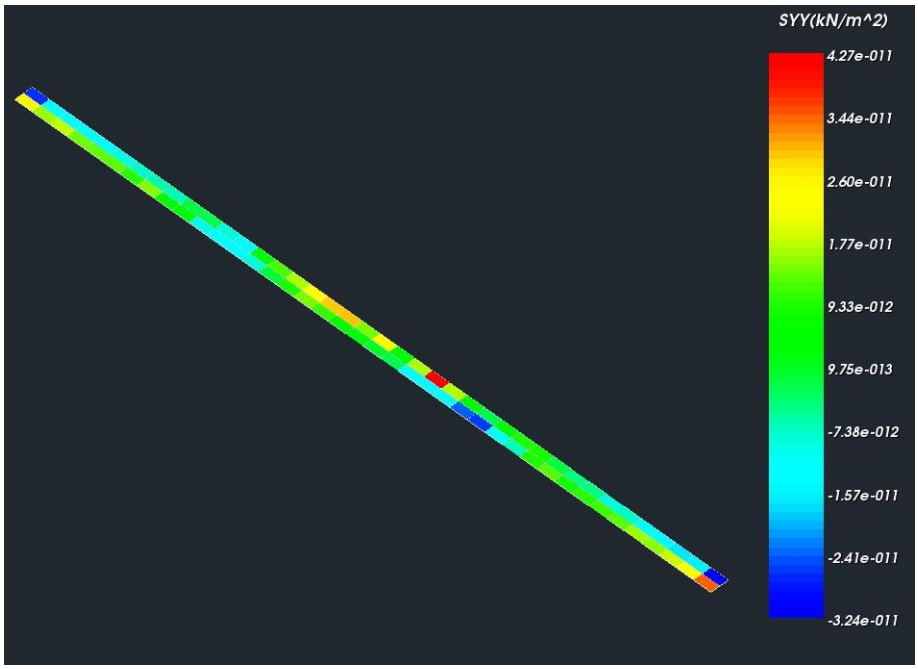
In load 1 only its own weight is included, while in load 2 a pressure load of 20 kN/m2 was introduced on the top face which is 6. Similarly the bottom face is 5.

So in Post-Processor, in order to see the results in the upper tread I will select the face 6 and for bottom face 5.

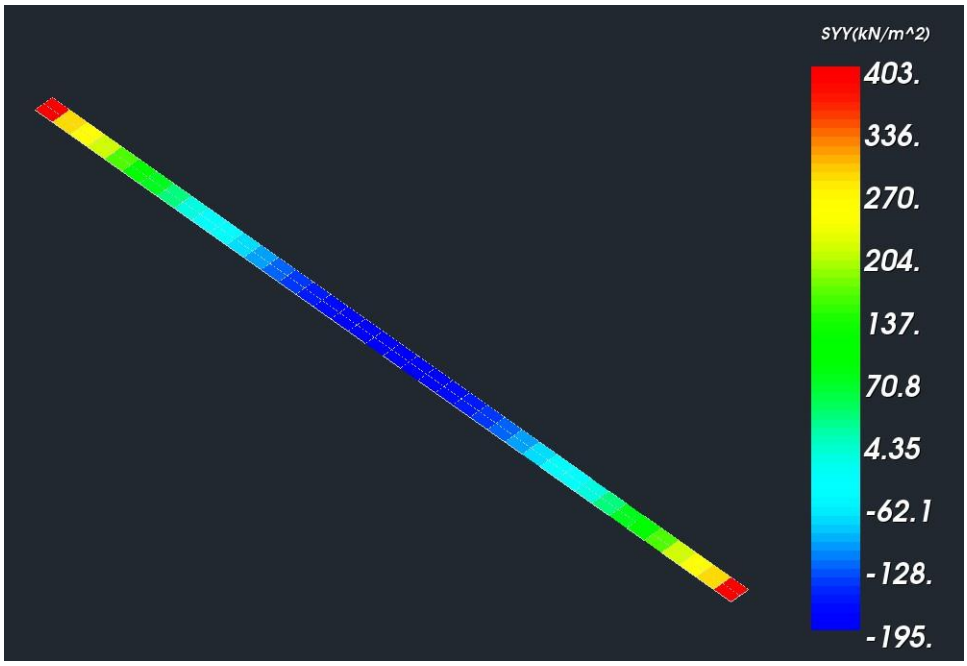
The stress developed by the vertical loads is the universal σyy.

- From Load 1 (same weight only)

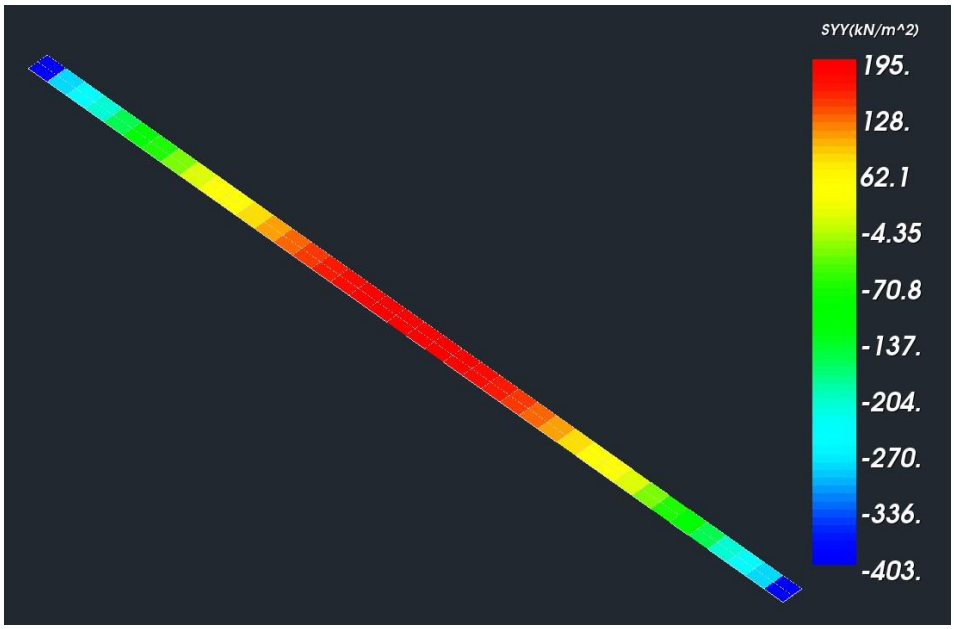
At the centroid (in the middle plane) the stresses are zero (the centroid is on the neutral axis)



In the upper foot we have the following picture i.e., as expected, tension at the ends and compression in the middle.

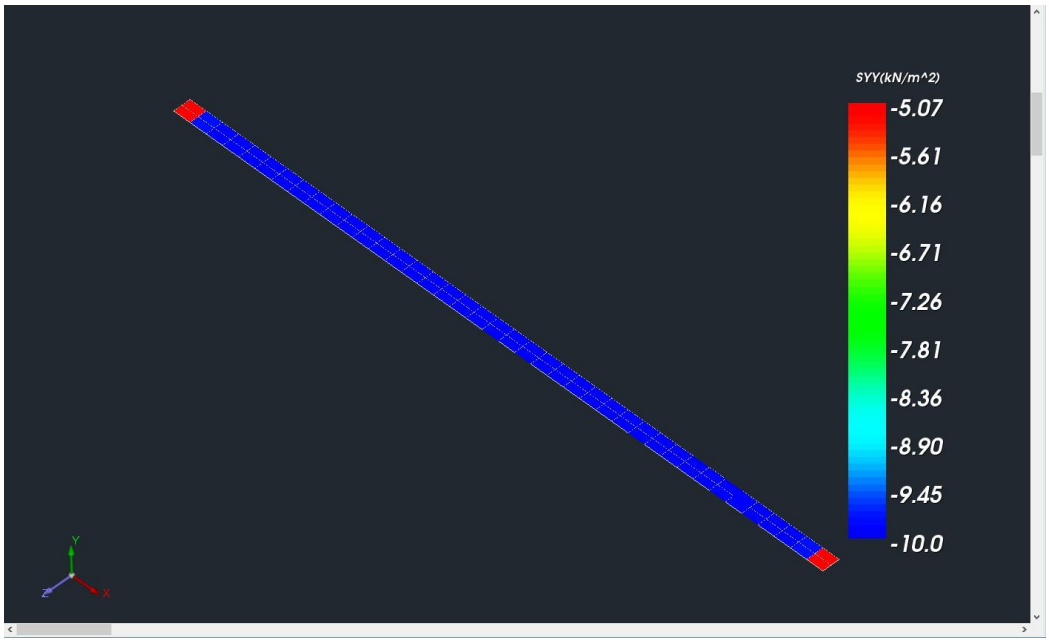


Similarly in the lower foot we have the same situation as the upper foot but exactly opposite signs.

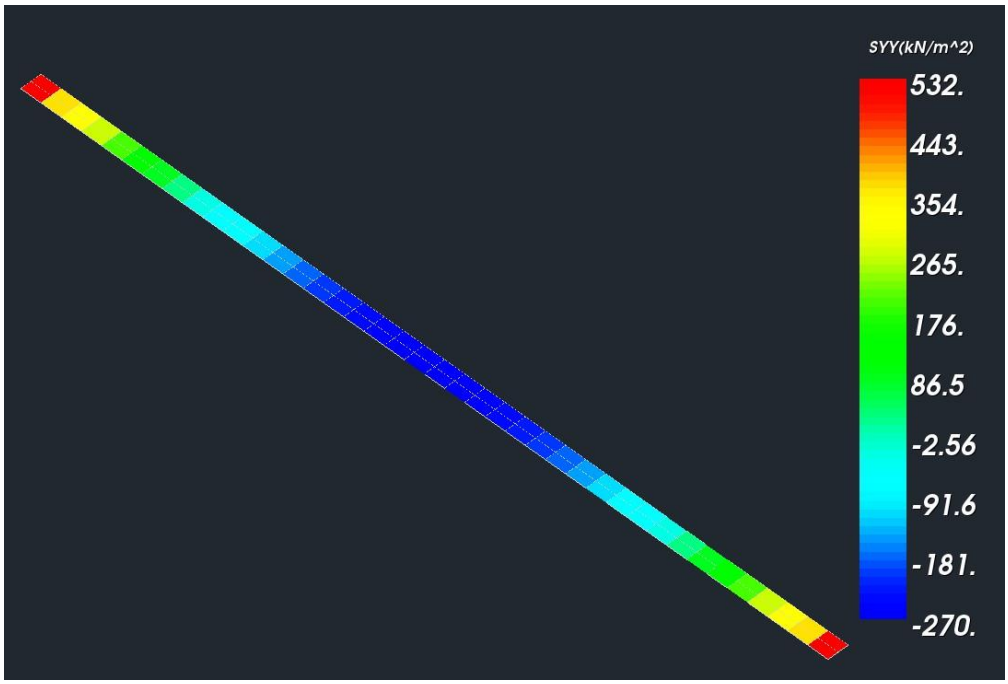


- From Charge

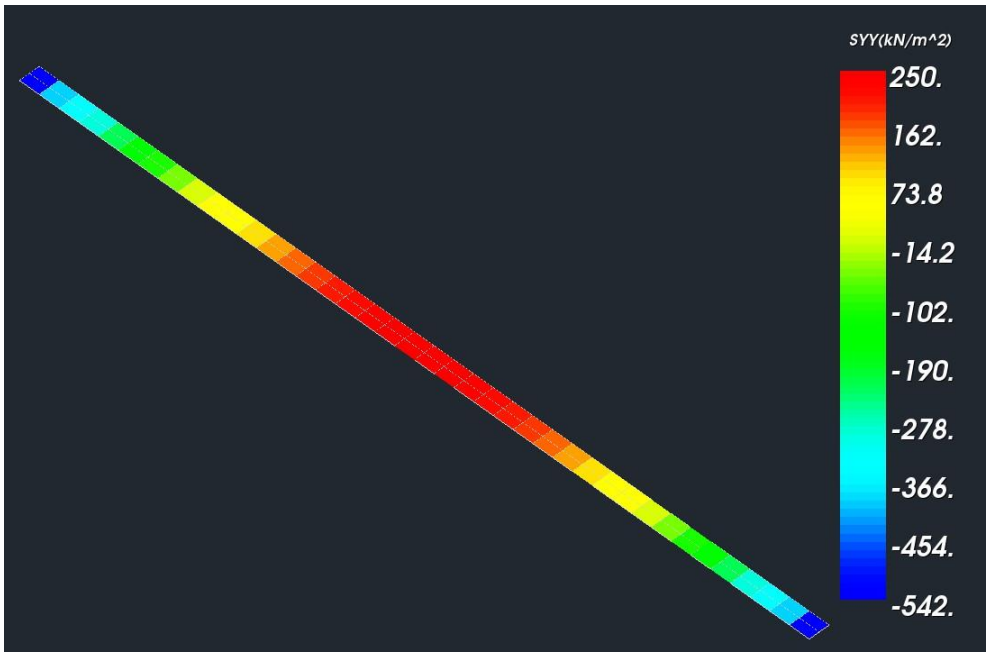
2 To centroid



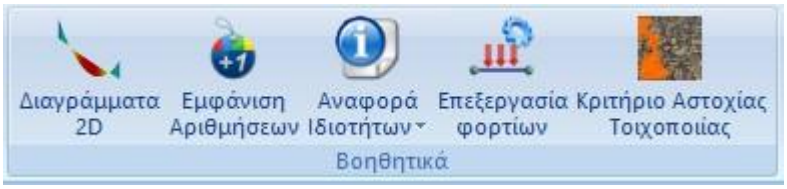
In the upper foot, as expected, tension at the ends and compression in the middle.



And finally on the lower foot, just the opposite situation.

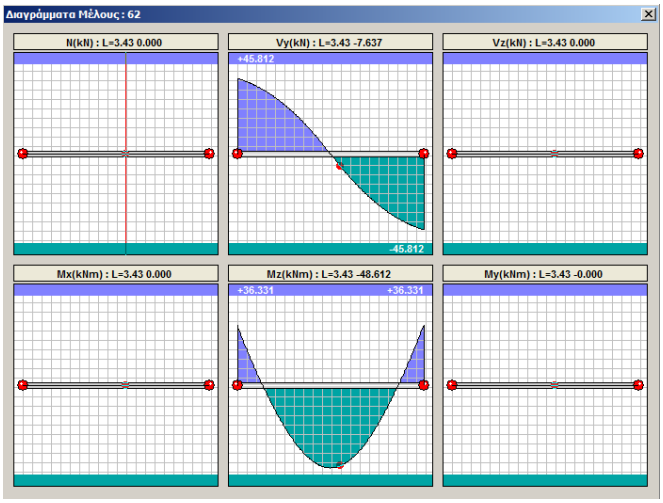


Helpful



2.1 2D diagrams

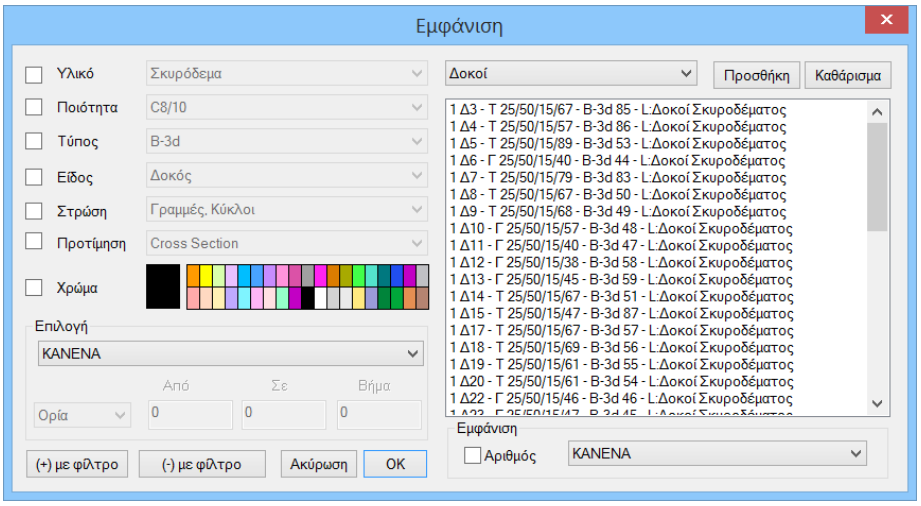
 : is the short way to see all 6 intensive sizes of a member (selected by left-clicking) gathered in one window. In fact while moving the mouse you will be able to see along the member the values of each intensity.



2.2 Show Numbers

 : to display on the physical or mathematical model any information you want such as numbers, degrees of freedom of members, nodes, moments of inertia, bifurcation, etc.

Calling the command displays the following dialog box:



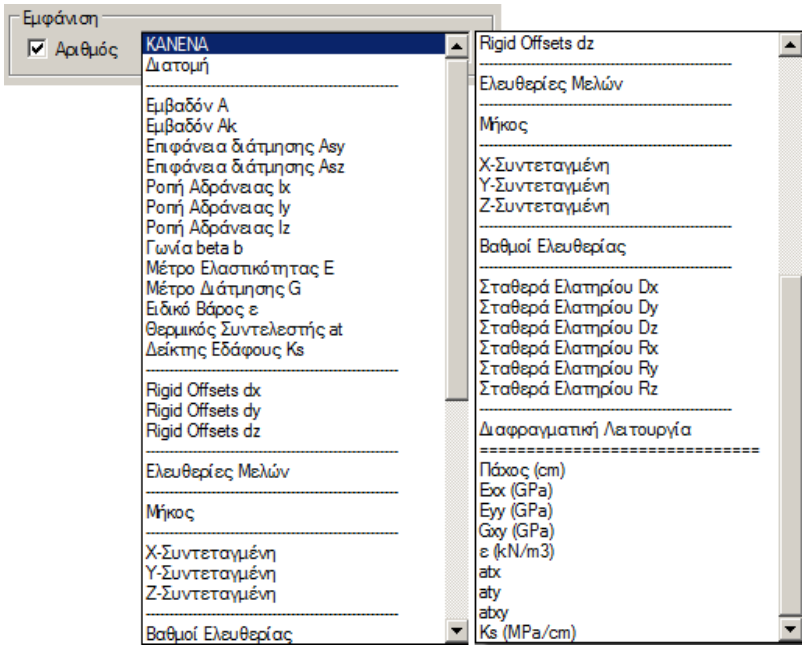
Select the items you want using the filters. Depending on the case

select:

-as a filter the "Material", "Quality", "Type", etc., and the (+) με φίλτρο and (-) με φίλτρο commands used to add or remove the selected items through a filter respectively, or

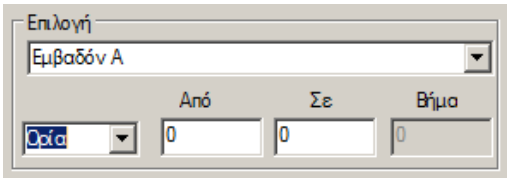
-one of the groups in the list Δοκοί and "Add".

Select the items you are interested in from the list (left key and ctrl, turn blue) and in the "Show" field:



Check the "Number" check box to display the numbering of the selected items.

From the list, select the information you want to display. In the "Select" field of the dialog box:

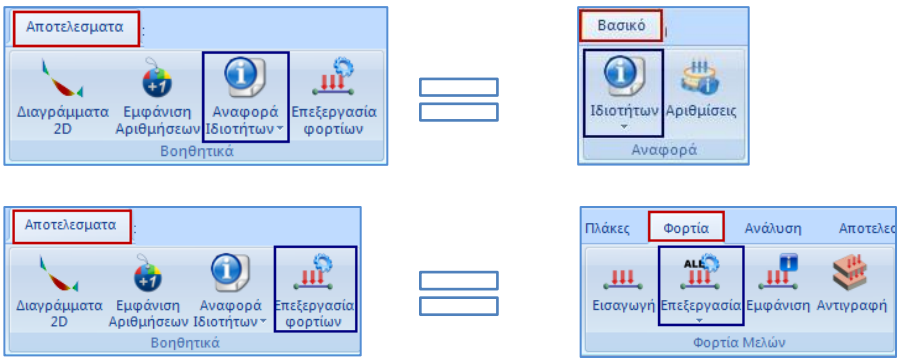


You can set additional filters based on the maximum and minimum values, or the limits you specify. For example, to display the max and min cross-sectional area values of beams, or those included within the limits "From", "To" with a certain step, etc.

To make all the values you have displayed disappear, select "NONE" from the list, uncheck the "Number" checkbox and select . 

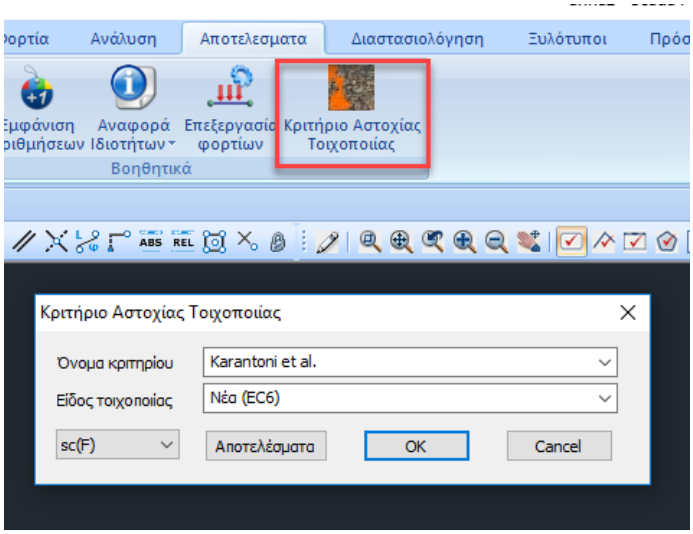
2.3 & 2.4 Reference properties & Load processing

We have already encountered the "Report properties" and "Edit loads" commands in the BASIC and LOADS sections respectively. (see Chapters 1 & 7)



For convenience and quick search you can also find them in the "Utilities" section.

2.5 Masonry failure criterion



The new version of Scada Pro has now introduced the failure criterion **Karantoni et al (1993)** referring to masonry (in particular clay masonry).

The stress-based check using a failure criterion is useful in cases where the provisions of EC6 and EC8-3 cannot be applied, such as:

- on curved bodies
- at out-of-level charging (in EC8-3)
- when there is no floor baffle node

WALL STRENGTH CRITERION Karantoni et al (1993)

This criterion is based on the criterion proposed by Ottosen (1977) for concrete. To transform the criterion to apply to masonry, experimental data were used by calibrating certain parameters. Unfortunately, the experiments used referred to reinforced concrete structures, constituting a major reason for the accuracy of this simulation.

The basic form of the criterion (**FORM 1**) is as follows:

$$\square=\square\cdot\frac{\square_{2}}{\square_{\square\square}^{2}}+\square\cdot\frac{\sqrt{\square}_{2}}{\square}+\square\cdot\frac{\square_{1}}{\square_{\square\square}}-1 \qquad (1)$$

$$\square$$

$$\square$$

where the parameters a, b, λ, $_{I1}$ and $_{J2}$ are calculated from the following data:

- From the **analysis** --> Main trends $_{\sigma1}$ and $_{\sigma2}$

- From the **material library** --> Uniaxial compressive □□□
  Uniaxial tensile □□□
  Compressive strength□□□□ in equal biaxial compression

Using the above form of the criterion one can conclude that:

For □<□--> **SUFFICIENCY**
For □=□--> **MARGINAL ADEQUACY**
For □ >□--> **INDEPENDENCE**

An alternative form of the criterion (**FORM 2**) is obtained if the following values are used in relation (1) instead of the main trends:

$$\square_1' = \frac{\square_{(1)\,\&}}{\square^*} \quad \square_2' = \frac{\square_2}{\square^*}, \ \square\square\square^* \geq 0 \qquad (2)$$

with σ* acting as a safety factor so as to obtain a **Boundary Capacity**,
ie:

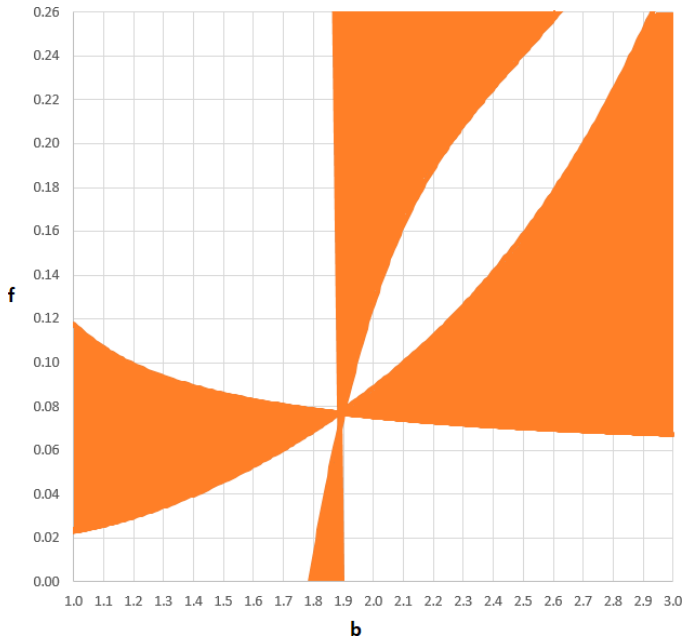
$$\square \cdot \frac{\square_2}{\square_{\square\square}^2} + \square \cdot \frac{\sqrt{\square}}{\square_2} + \square \cdot \frac{\square_1}{\square_{\square\square}} - 1 = 0 \qquad (3)$$

The solution of equation (3) with respect to σ* is done by testing as the relationship is braided.
Using the above form of the criterion one can conclude that:

For □∗ <□--> **SUFFICIENCY**
For □∗ =□--> **MARGINAL ADEQUACY**
For □∗ >□--> **INDEPENDENCE**

LIMITS OF APPLICATION OF THE MASONRY FAILURE CRITERION

At first sight there are no restrictions on the choice of parameters b and f. The transformation of the equation from FORM 1 to FORM 2 is a one-point process so that a solution is obtained. However, there are cases where this is not possible. In particular, there are pairs b and f for which a negative discriminant may arise in equation (3b).
The figure below shows in orange the zones with these inappropriate b and f pairs.

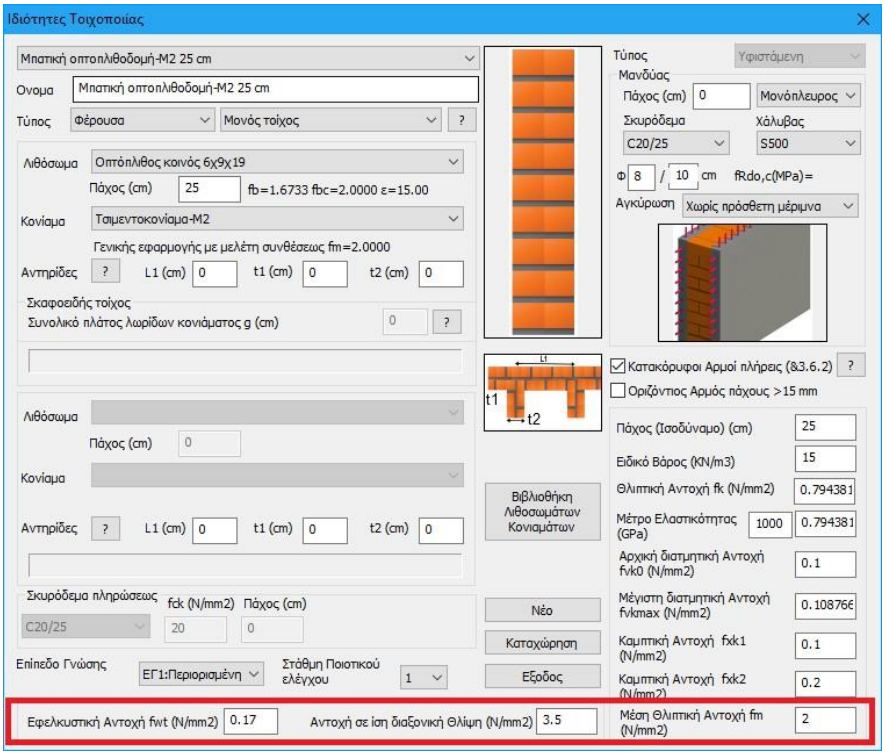


The control option has been placed in the **Results** menu.

The steps required are as follows:

1. **We define material and strengths in masonry library.**

In the library of masonry we determine the value of the strengths:



- Uniaxial compressive strength f_{wc}
- Uniaxial tensile strength f_{wt}
- Compressive strength f_{wcb} in equal biaxial compression

The values suggested by the authors can be used as an indication:

$$\frac{\square_{\square\square}}{\square_{\square\square}} = 0.085 \quad \& \quad \frac{\square_{\square}}{\frac{\square\square}{\square}} = 1.65 \qquad (4)$$

$\square\square$

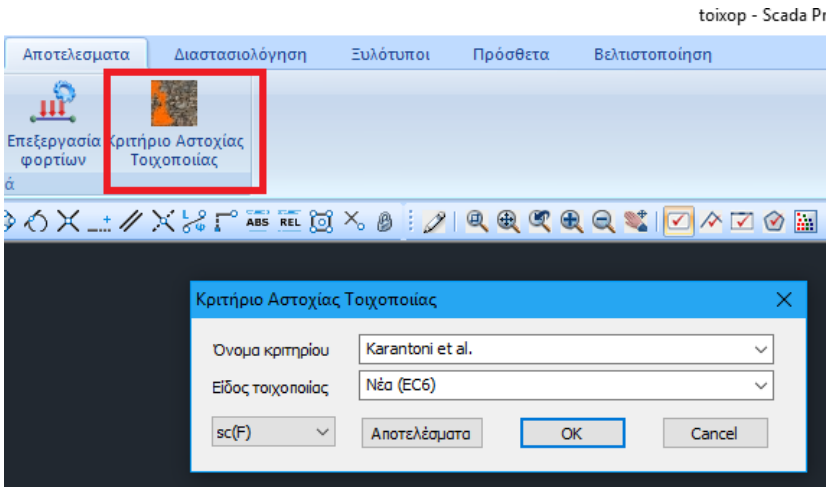
If the values are **NOT** filled in, which is not recommended, the suggested values will automatically be used.

2. **We perform the analysis and create combinations.**

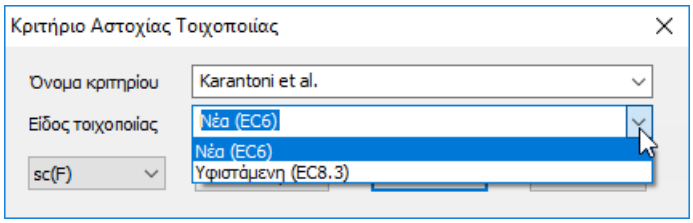
3. **We go to the RESULTS tab.**

4. **We invite the combinations.**

5. **We go to the Masonry Criteria command and select the TYPE of masonry.**



We have to choose whether the masonry is NEW or EXISTING so that the strengths f are divided by appropriate safety factors.



More specifically:

- For **NEW** --> $_{cs}$ factor based on EC6
- For **EXISTING** --> $_{CFm}$ factor based on EC8-3

6. **We press OK and exit.**

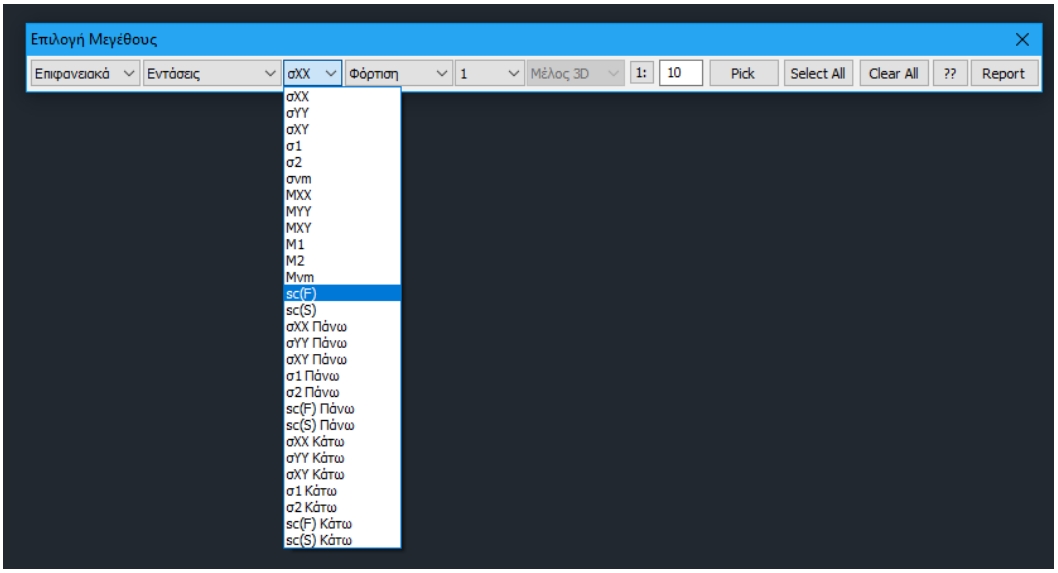
7. **In the size selection bar we select the appearance of the criterion.**

Recall that according to the recent changes the surface trends are calculated both at the mid-plane and at both sides of the element.

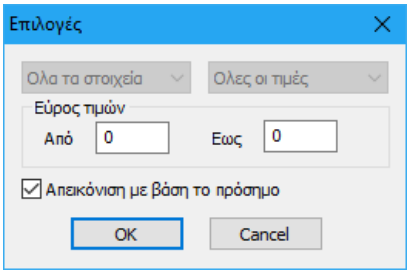
We can therefore choose to look at the criterion:

- either with **FORM 1 (scF)**
- either with **FORM 2 (scS)**

in each of these three places.



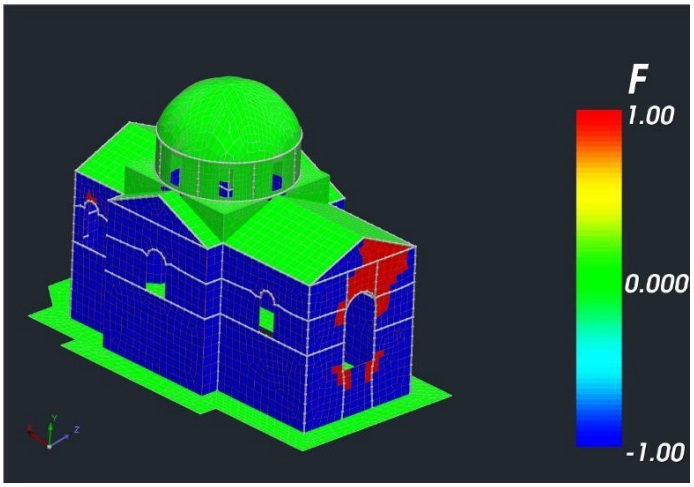
If the display based on the is selected 



then the vector is coloured according to the value of the criterion:

- BLUE for **Sufficiency**
- RED for **INADEQUACY**

- GREEN for material other than masonry (e.g. concrete)



To better evaluate the results of the audit, there are two options:

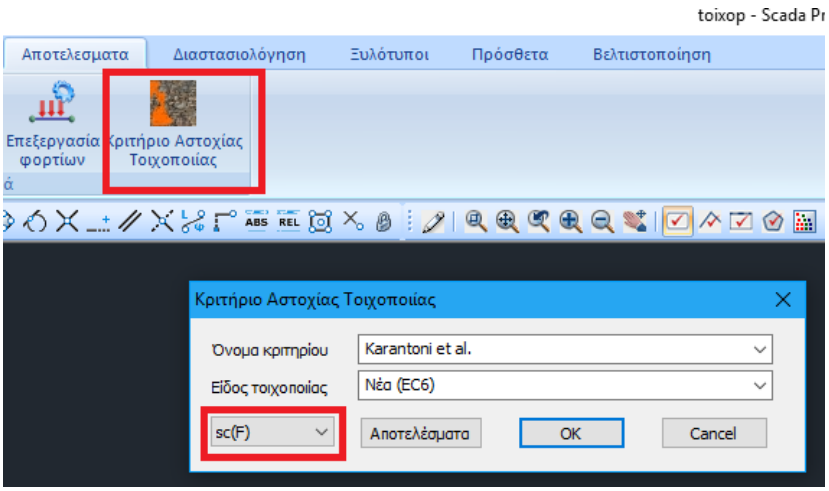
8. **If desired, in the size selection bar, select the REPORT command.**

This command prints the values of the tested size per surface element.

Name	Comb.	F
****** Plegma - S30 ******		
696	4	-0.549
697	4	-0.573
698	4	-0.625
699	4	-0.731
700	4	-0.798
701	4	-0.807
702	4	-0.761
703	4	-0.748
704	4	-0.679
705	4	-0.333
706	4	-0.519
707	4	-0.338

9. **From the command MORTGAGE Criterion we see an aggregate issue with details of the adequacy or otherwise of each mesh.**

From the dropdown list we select the format and the location of the criterion. Click on the **RESULTS** command to print the issue.



The resulting issue has the following format.

Κριτήριο Αστοχίας Τοιχοποιίας

Όνομα Κριτηρίου Karantoni et al.
Είδος τοιχοποιίας Υφιστάμενη (EC8.3)
Εξεταζόμενη Θέση Μέση Επιφάνεια
Περιγραφή Κριτηρίου $F = \alpha J_2/f_w^2 + \lambda J_2^{(1/2)}/f_w + \beta I_1/f_w - 1$
ΕΠΑΡΚΕΙΑ : Για $\sigma^* \le 1$
ΑΝΕΠΑΡΚΕΙΑ : Για $\sigma^* > 1$

Έλεγχος Πλεγμάτων

Όνομα Πλέγματος : PLATE S1/1/2 Υλικό : Μπατική οπτοπλιθοδομή-M2 25 cm

Αντοχή σε θλίψη f_w = 2.000 (N/mm²) γ_M = 2.20 / 1.50
Αντοχή σε εφελκυσμό f_{wt} = 0.170 (N/mm²) CF = 1.35
Αντοχή σε ίση διαξονική θλίψη f_{wc_b} = 3.500 (N/mm²)

Παράμετροι Κριτηρίου : α = 1.917 b = 1.750 c_1 = 13.267 λ_1 = 0.581
β = 4.086 f = 0.085 c_2 = 0.959 λ_2 = 0.995

Πλήθος Στοιχείων	Συνολική Επιφάνεια (m²)	Πλήθος Στοιχείων που Αστοχούν	Συνολική Επιφάνεια Αστοχίας (%)	Κρίσιμος Συνδυασμός			
				Α.Α.	Πλήθος Στοιχείων που Αστοχούν	Συνολική Επιφάνεια Αστοχίας (%)	σ^*_{max}
242	10.00	4	0.88	43	3	0.56	1.28

##########

Όνομα Πλέγματος : PLATE S1/2/3 Υλικό : Μπατική οπτοπλιθοδομή-M2 25 cm

Αντοχή σε θλίψη f_w = 2.000 (N/mm²) γ_M = 2.20 / 1.50
Αντοχή σε εφελκυσμό f_{wt} = 0.170 (N/mm²) CF = 1.35
Αντοχή σε ίση διαξονική θλίψη f_{wc_b} = 3.500 (N/mm²)

Παράμετροι Κριτηρίου : α = 1.917 b = 1.750 c_1 = 13.267 λ_1 = 0.581
β = 4.086 f = 0.085 c_2 = 0.959 λ_2 = 0.995

Πλήθος Στοιχείων	Συνολική Επιφάνεια (m²)	Πλήθος Στοιχείων που Αστοχούν	Συνολική Επιφάνεια Αστοχίας (%)	Κρίσιμος Συνδυασμός			
				Α.Α.	Πλήθος Στοιχείων που Αστοχούν	Συνολική Επιφάνεια Αστοχίας (%)	σ^*_{max}
526	25.80	0	0.00	35	0	0.00	0.76

##########

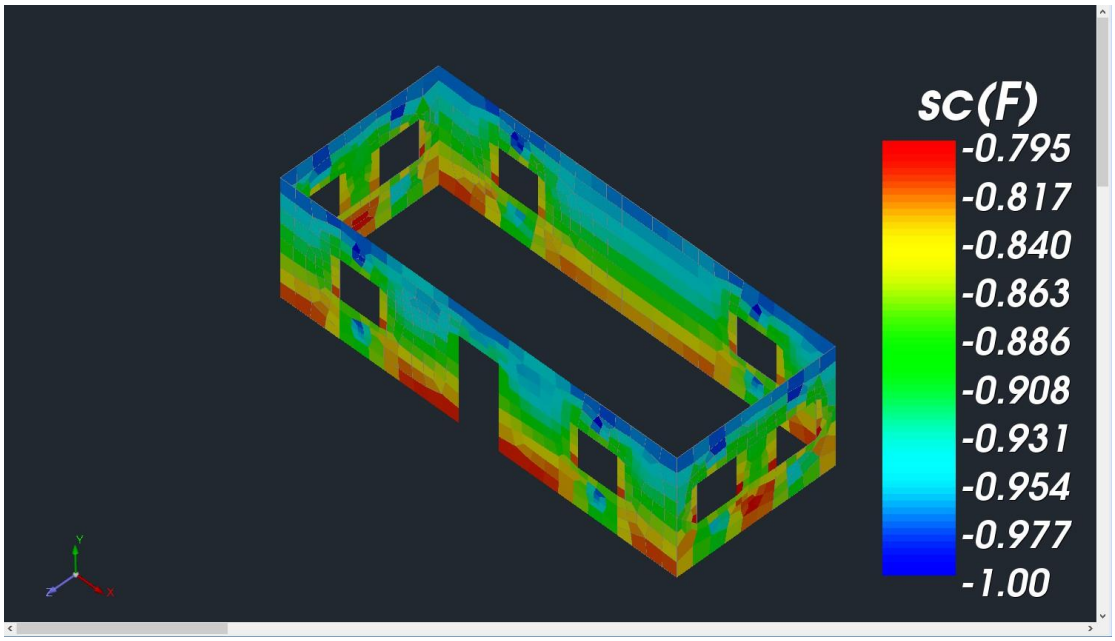
Όνομα Πλέγματος : PLATE S1/3/2 Υλικό : Μπατική οπτοπλιθοδομή-M2 25 cm

Αντοχή σε θλίψη f_w = 2.000 (N/mm²) γ_M = 2.20 / 1.50
Αντοχή σε εφελκυσμό f_{wt} = 0.170 (N/mm²) CF = 1.35

2.5.1 SOLID - Carantonis Criterion

In the same way that the trends are displayed, the appearance of the Karantoni criterion was incorporated.

The results are presented below.



Both criteria have been incorporated and can appear on any of the 6 faces and the centroid.